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COMMUNICATIONS

NINETEENTH CENTURY PROVINCIAL EYE HOSPITALS*

(With special reference to those no longer extant)

BY
ARNOLD SORSBY
LONDON

EIGHTEENTH century England witnessed not only a hitherto unparalleled growth in population, but a considerable redistribution of it over the country. The reasons for the first are obscure, but are clear enough for the other. In the first place the growth of the population reduced England from a substantial wheat-exporting country to one that had no surplus for export. This led to the gloomy prophecies of Malthus and, more concretely, to extensive enclosure of land which aimed, no longer as in Thomas More's days to the conversion of arable land into pasture, but at the creation of large compact farms worked by the newer agricultural methods. Western and South-Western England showed least of these new enclosures, and hence tended to a relatively low density of population.

Even more significant was the consequence of the fuel famine in the early part of the century. For centuries the great forests had been invaded, trees felled, and land brought under the plough, whilst little had been done in the way of afforestation. The timber

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of Sussex Weald gave out first and the iron industry, where smelting depended on charcoal, migrated to Shropshire and the Forest of Dean, only soon to be faced there with threatening signs of exhaustion. The systematic exploitation of coal came just in time to avert an industrial standstill, but not soon enough to avoid an intense domestic shortage of fuel early in the reign of George III. Industry—and population—henceforth centred around the coalfields (though at a later date the building of canals early in the nineteenth century and of railways in the second third of the century did much to counteract excessive concentration into a few centres).

The uneven development of different industries in various parts of the country, the rise of new industries, and the decay of some of the older ones were further factors in the shift of population. Thus the worsted industry grew faster in the West Riding than in its classical home of Norfolk and Suffolk, and the rising West Riding also outstripped the woollen industry of Exeter and the other old-established centres in South-West England. The prohibition of imports of cotton from India (since such imports, in the words of the Act of 1700 " must inevitably be to the greater detriment of this Kingdom by exhausting the treasure thereof . . . and taking away the labour of the People whereby many of the Manufacturers of the Nation are become excessively burdensom and chargeable to their respective Parishes ") led to the development of a new industry concentrated from the first in Lancashire and Cheshire. The iron foundries and potteries in Staffordshire and Warwickshire expanded rapidly with the advent of coal power. Side by side with these developments went the decay of the peasant villages; a present-day writer (Lord Ernle) could fill nearly three pages of a review on *English Farming Past and Present* with a list of local and domestic industries which perished at this time.

The consequences of all these developments are seen strikingly in the fact that whilst at the beginning of the eighteenth century the four most populous counties apart from Middlesex (including London) were Somerset, Gloucestershire, Wiltshire and Northamptonshire, a hundred years later these four had all been outstripped by Lancashire, the West Riding, Staffordshire and Warwickshire.

The beginning of the nineteenth century therefore shows an England with two sharply contrasted populous areas, those that were rapidly expanding and those that were shrinking. In that England, Exeter, even if numerically smaller, was still a more significant city than Leeds or Bradford, Bath was still a major centre, and Bristol had but lately given way to Liverpool as the most important port. The rise and decline of eye hospitals, as of other civic institutions during the nineteenth century, can therefore be

assessed only in the knowledge of this changing background. For the sake of convenience the century may be considered in three periods, each one third of a century. Such a division is not altogether arbitrary, as the first third covers the age of canal-building, the second that of the laying down of the main railway lines, whilst the last third gives an England having many of the features of the contemporary scene.

FIG. 1.

Map showing centres at which eye (or eye and ear) institutions were founded during 1808-32.

1.—The first third of the century

Records are extant of the founding of nineteen eye hospitals between 1808 and 1832. Of these eleven have survived and eight have become defunct. Whilst the figure of survivors is accurate, it is possible that there came into existence several ephemeral institutions of which nothing is now known: the eight institutions that died must therefore be regarded as a minimum figure.

Fig. 1 shows the distribution of these nineteen eye institutions. It will be seen that they were largely concentrated in the declining but still populous South-Western area of England and in the rapidly growing northern belt.

The eleven survivors are now all venerable institutions, some being of considerable importance as the following list (with their date of foundation) shows:—

Exeter: West of England Eye Infirmary	1808
Bristol: Eye Hospital	1810
Bath: Eye Infirmary	1811
Bristol: Eye Dispensary	1812
Manchester: Royal Eye Hospital	1815
Shrewsbury: Eye, Ear and Throat Hospital for Shropshire and Wales	1818
Liverpool: Eye and Ear Infirmary	1820
Plymouth: Royal Eye Infirmary	1821
Newcastle-on-Tyne: Eye Hospital	1822
Birmingham: Birmingham and Midland Eye Hospital	1823
Brighton: Sussex Eye Hospital	1832

Most of these institutions underwent several changes of name, whilst the hospitals at Exeter, Bristol, Manchester, Liverpool and Birmingham all made substantial contributions to the progress of ophthalmology.

Of the eight institutions that failed to survive:—

Taunton: Eye Infirmary (1816-1905),
Southam: Eye and Ear Infirmary (1818-72),
Liverpool: Institution for Curing Diseases of the Eye (1820-34),
Norfolk: Norfolk and Norwich Eye Infirmary (1822-1925),
Hull: Dispensary for curing diseases of the Eye and Ear (1822-*c.* 1831),
Leeds: Eye and Ear Infirmary (1822-69),
Sheffield: Eye Dispensary (1828-74),
York: Eye and Ear Institution (1831-87),

all, except the one at Hull, have a substantial history and intrinsic interest.

Taunton.—This Somerset town had a small population (8,534 in 1821), but was of considerable historical importance as it dated back to the eighth century. A castle, still extant as a museum, was built in the twelfth century and a grammar school founded in 1522. From 1299 till the Reform in 1832 it returned two members to Parliament. The Eye Infirmary was founded in 1816 by James Billett, who was its sole Surgeon till 1865. It was not till 1854 that the Infirmary became a public charity. In 1865 Billett was joined by Samuel Farrant, who soon after was, in turn, sole surgeon till his death in 1903. His son, Charles Farrant, found it difficult to maintain this institution and the Infirmary was sold by auction in 1905, the residual proceeds of the sale being applied for the benefit of the Taunton and Somerset Hospital.

Southam.—The Eye and Ear Infirmary at Southam, a small town in Warwickshire (with a population of 1,161 in 1821 and 1,784 in 1881) likewise appears to owe its inception and most of its history to one man. Henry Lilley Smith, its founder, served it as sole surgeon from its foundation in 1818 till his death in 1859. In the succeeding thirteen years unsuccessful attempts were made to keep the institution alive as a (general) Cottage Hospital. This eye and ear infirmary appears to have been an attempt to create a Provident Dispensary for eye diseases and as such may be regarded as a precursor of the present day clinics run by the National Ophthalmic Treatment Board.

Liverpool.—The Institution for Curing diseases of the Eye was opened in 1820—*i.e.*, the same year as the Liverpool Ophthalmic Infirmary which has since developed into the Liverpool Eye and Ear Infirmary. Though supported by William Rathbone, who was its president and by Joseph Brandreth, who was one of its three original surgeons and also an eminent surgeon to the Liverpool (Royal) Infirmary, the Institution disappeared in 1834—fifty-three years before an eye department was opened at the Infirmary.

Norfolk.—The long history of the Norfolk and Norwich Eye Infirmary is only partially closed. In 1925 the Infirmary became amalgamated with the Norfolk and Norwich General Hospital, retaining a physical but not an administrative independence.

Hull.—The Dispensary for curing diseases of the Eye and Ear appears to have originated and to have died with Thomas Buchanan. It is known to have been established in 1822 and still to have "continued at his surgery" in 1831. It was probably never a public institution.

Leeds.—The forty-seven years of existence of the Eye and Ear Infirmary appear to have acted as a slow catalyst for the development of a department for eye and ear diseases at the General Infirmary. Strangely enough this institution, though well located

and served by an able staff, does not seem to have shown any extensive development.

Sheffield.—The Eye Dispensary was established in 1828 by Samuel Gregory and centred largely around him and his associate, E. D. L. Gillott. After Gregory's death in 1858 there were some changes in the staff, but the Institution came to an end in 1874, two years after the General Infirmary had established an Eye Department.

FIG. 2.

Map showing centres at which eye (or eye and ear) institutions were founded during 1834-61.

York.—The Eye Institution which existed for fifty-six years before being absorbed by the York County Hospital in 1887, seems at one time also to have acted as an ear Institution. That it was a struggling institution throughout its existence is apparent from the fact that it had no beds till 1877, when a small hut with two beds was erected. but in 1884 three years before its absorption by the County Hospital, it could only admit three patients owing to lack of means. The number of out-patients was, moreover, also small. The failure of the York Eye Institution has its parallel in the decline of the town as a whole, a decline that engulfed a small medical school of some standing.

The second third of the century

Between 1834 and 1861 fifteen eye institutions are known to have been established, and of these six have survived. As can be seen from Fig. 2 South-West England still claimed a considerable development, but the Midlands now figure prominently.

In contrast to the names of towns noted in the first third of the century these sixteen contain only two (Liverpool and Birmingham) referring to future University centres, and neither of these newly founded institutions survived. The six survivors covered populous areas previously not well served :—

Weymouth : Dorset County and Weymouth Royal Eye Hospital, 1836.
Sunderland : Eye Infirmary, 1836.
Worcester : Ophthalmic Hospital, 1841.
Maidstone : Kent County Ophthalmic Hospital (Kent County Ophthalmic and Aural Hospital since 1929), 1847.
Bradford : Eye and Ear Infirmary, 1857.
Nottingham : Nottingham and Midland Eye Infirmary, 1859.

Amongst the nine institutions that failed to survive :—

Bridgwater : Eye Dispensary (1834-*c.* 1850),
Bath : Eye and Ear Dispensary (1837-1916),
Liverpool : Dispensary for Diseases of the Eye (1838-53), St. Anne's Dispensary and Eye and Ear Institution for the Eastern Division of the Town (1839?-65),
Devonport : Devonport and Stonehouse General Dispensary and Institution for Diseases of the Eye and Ear (*c.* 1848-1936),
Birmingham : Eye and Ear Infirmary (1859-70),
Redland : General Dispensary for Women and Children and Dispensary for Diseases of the Eye and Ear (1860-87),
Dover : Eye and Ear Institution (*c.* 1860-64),
Cheltenham : Cheltenham and Gloucestershire Ophthalmic Infirmary (1861-*c.* 1882)

there is a fairly obvious pattern in the Bills of Mortality. Six institutions—those at Bath, Devonport, Redland, Birmingham and the two at Liverpool—arose in close proximity to older and thriving institutions and appear to have been unable to take firm root; two—those at Bridgwater and Dover—were largely personal ventures, whilst the remaining centre—that at Cheltenham—could not survive the limitations imposed by the restricted population it served.

(*a*) The Institutions at Bath, Devonport, Redland, Birmingham and Liverpool.

The six institutions at these centres all seem to have been limited ventures, the limitations being perhaps dictated in the first place by the existence of rival institutions.

Bath.—Established in 1837 as an Eye and Ear Dispensary, this institution existed as one small room up to 1916, when it became a modern hospital devoted exclusively to Oto-rhinology. It is likely that eye work was discontinued as early as 1870. In contrast, the Bath Eye Infirmary established in 1811 has flourished continuously.

Devonport.—The Devonport and Stonehouse General Dispensary and Institution for Diseases of the Eye and Ear figures in the 1848 Medical Directory and had a chequered history. Under its subsequent name of Royal Albert Hospital and Eye Infirmary, Plymouth, it merged in 1936 into the newly founded Prince of Wales Hospital, Plymouth, which represented an amalgamation of several hospitals in Plymouth and nearby. Since 1941 little or no eye work has been done at Devonport, as the Royal Eye Infirmary at Plymouth, which has been in existence since 1821, adequately serves the area.

Redland.—The Redland General Dispensary for Women and Children and Dispensary for diseases of the Eye and Ear was situated on the outskirts of Bristol. But little information is available beyond the fact that it and the eye dispensary existed till 1887 and originated before 1871 (? in 1860 when the institution was founded).

Birmingham.—The Birmingham Eye and Ear Infirmary established in 1859 lived for only eleven years, becoming amalgamated with the Birmingham Ear and Throat Hospital, which had been founded in 1844, whilst its eye department became absorbed by the well-established Birmingham and Midland Eye Institution which was founded in 1823 as the Birmingham Eye Infirmary. In spite of the eminent staff that served it in its short life, the Infirmary never seems to have grown to substantial proportions.

Liverpool.—The two somewhat ephemeral dispensaries—The Dispensary for Diseases of the Eye and the St. Anne's Dispensary

and Eye and Ear Institution—both laboured under limitations. The first was a private venture of Robert Hibbert Taylor who opened it in 1838; it came to an end when Taylor in 1853 joined the staff of the well established Eye and Ear Infirmary, which had grown out of the Liverpool Ophthalmic Infirmary (itself established in 1820 and amalgamated with the Ear Institution in 1841). As for the St. Anne's Dispensary and Eye and Ear Institution, it is not known whether its ophthalmic department functioned at the founding of the Dispensary in 1839; it came to an end in 1865 when St. Anne's became the Eastern section of the Liverpool Dispensaries.

(*b*) The Institutions at Bridgwater and at Dover.

The Eye Dispensary at Bridgwater was founded by Jonathan Toogood in 1834 and "supported solely at his expense." He had also founded the Bridgwater Infirmary in 1813. It is known that in 1847 the surgeons of the Eye Dispensary were John Giles Toogood and J. Parsons. In 1850 the dispensary, which had six beds, was absorbed in the Bridgwater Infirmary of which Jonathan Toogood was senior surgeon and John Giles Toogood one of the other surgeons.

The Dover Eye and Ear Institution was an even more personal and ephemeral foundation. It seems to have existed between 1860 and 1864 and to have centred around C. R. Cutmore, who qualified in 1858, and lived at Dover till 1863 or 1864, when he moved to London. The population of Dover in 1861 was 16,261.

(*c*) The Institution at Cheltenham.

The Cheltenham and Gloucestershire Ophthalmic Infirmary was founded in 1861 by Walter H. Jessop, who died a year later at the age of 34 years. From 1868 onwards the surgeons of the Infirmary also served as surgeons of the Cheltenham and Gloucestershire General Hospital. The disappearance of the Infirmary at around 1882 may have been caused by its absorption by the General Hospital, but did not lead to the establishment of an eye department. This came in 1909, twenty years after the establishment of a second Eye Institution at Cheltenham.

The last third of the century

Between 1866 and 1880 eight eye institutions were founded and of these only one has survived. In the nine years 1881-9 ten were established and five have survived. But these successful years also mark the virtual end of the movement for the founding of eye hospitals, none being established in the concluding decade of the century, whilst the contributions of the twentieth century have been meagre.

FIG. 3.

Map showing centres at which eye (or eye and ear) institutions were founded during 1866-89.

The closing third of the century—or more strictly the twenty-four years 1866-89 therefore saw the rise of eighteen eye institutions (Fig. 3) twelve of which no longer exist.

Of the six surviving hospitals:—

Liverpool: St. Paul's Eye Hospital (St. Paul's Eye and Ear Hospital from 1871 till 1909), 1871,

Wolverhampton: Eye Infirmary, 1881,

Hereford: Victoria Eye Hospital, 1883,
Portsmouth: Portsmouth and Southern Counties Eye and Ear Hospital, 1884,
Oxford: Eye Hospital, 1886,
Southampton: Free Eye Hospital, 1889,

two, those at Liverpool and Oxford are at University centres. St. Paul's Eye Hospital at Liverpool incidentally represents the only successful effort of a second eye institution in a town outside the metropolis, thriving in spite of the existence of an old established special hospital.

Of the institutions that did not survive:—

Gloucester: Gloucestershire Eye Institution (1866-78),
Hull: Eye and Ear Dispensary (1867-*c.* 1877),
Clun: Eye and Ear Dispensary (1869-74),
Bedford: Eye Dispensary (1873-74),
Tunbridge Wells: Eye, Ear and Throat Hospital (1878-1935),
Swansea: Eye Hospital (1878-88),
Birkenhead: Eye and Ear Dispensary (1879-*c.* 1892),
St. Leonard's: Buchanan Ophthalmic and Cottage Hospital (1881-86),
Scarborough: King's Cliff Hospital and Eye and Ear Infirmary (1883-*c.* 1897),
Halifax: Eye, Ear and Throat Hospital (1886-1914),
Cardiff: Eye and Ear Hospital (1887-97),
Cheltenham: Eye, Ear and Throat Infirmary (1889-1924),

those at Gloucester, Tunbridge Wells, Swansea, Scarborough, Halifax, Cardiff and Cheltenham served a useful purpose in stimulating the development of adequate facilities for ophthalmology in the local general hospitals. At the other centres there arose only ephemeral institutions centring around a personal tradition; they do not appear to have influenced even local development to any extent.

(*a*) Eye institutions that became amalgamated with a general hospital or stimulated the development in it of an ophthalmic department.

Gloucester.—The Gloucestershire Eye Infirmary, founded in 1866, never seems to have become a significant institution, though Brudenell Carter served it for some time. Amalgamation with the Gloucestershire General Infirmary in 1878 led to the establishment of an ophthalmic department there.

Tunbridge Wells.—Tunbridge Wells Eye, Ear and Throat Hospital founded in 1878 was originally a dispensary, but had grown to an institution with twenty-two beds by 1935, when it became amalgamated with the Tunbridge Wells General Hospital to form

the Kent and Sussex Hospital at Tunbridge Wells. The ophthalmic department of the new hospital is an important section of it in contrast to the total absence of any eye or ear department in the old Tunbridge Wells General Hospital.

Swansea.—The Eye Hospital established in 1878 had grown out of a private clinic conducted by Jabez Thomas for thirteen years. By 1888 it had become necessary to expand and rebuild it, but the alternative plan of amalgamation with the Swansea General Hospital was carried through instead, Jabez Thomas and his colleague, A. D. Davidson, being appointed surgeons to the ophthalmic department, which had been established eight years earlier.

Scarborough.—The King's Cliff Hospital and Eye and Ear Infirmary appears to have centred largely around F. Dale, to have existed from 1883 till about 1897, and to have led to the establishment of an Ophthalmic and Aural service at the Scarborough Hospital.

Halifax.—John Oakley's suggestion than an eye and ear department be founded at the Halifax General Infirmary having been declined, he proceeded to open up an independent hospital. Twelve years later an eye department at the Infirmary came into existence under the care of Samuel Lodge. This soon outstripped the Eye and Ear Hospital which closed down after a further sixteen years.

Cardiff.—The Eye and Ear Hospital was established in 1887—the same year as the ophthalmic department at the Royal Infirmary. By 1895 the senior of two original surgeons of the Eye and Ear Hospital was no longer active, and the hospital appears to have closed down with the appointment of its surviving surgeon as assistant surgeon to the ophthalmic department of the Infirmary.

Cheltenham.—The Cheltenham General Hospital which appears to have absorbed at around 1882 the Cheltenham and Gloucestershire Ophthalmic Infirmary founded in 1861 without apparently establishing an eye department, had to contend with the formation of the Eye, Ear and Throat Infirmary in 1889. Twenty years later an eye and ear department was at last established at the General Hospital, only to be taken over in 1924 by the special hospital when the two institutions became amalgamated. In 1936 the physical independence of the Eye and Ear Hospital came to an end when a new block for these specialties was built on the grounds of the General Hospital.

(*b*) Ephemeral Institutions.

Hull.—The Eye and Ear Dispensary existed from 1867 for about ten years, and centred around Angus Macmillan. An eye department was first opened at the Hull Royal Infirmary in 1887.

Clun.—The Eye and Ear Dispensary appears to have centred around J. Welsh and to have existed in 1869-74.

Bedford.—The Eye Dispensary seems to have lasted for the two years 1873-4 and to have centred around Thomas Gibson. The County Hospital had an eye department as early as 1849.

Birkenhead.—The Eye and Ear Dispensary was founded by Thomas Sargent Floyd in 1879. There were many changes in the staff before the institution, which had grown into a hospital with four beds by 1884 and received paying patients by 1891, disappeared by about 1892.

St. Leonard's.—Buchanan Ophthalmic and Cottage Hospital. Originally it was intended that a Cottage eye hospital should be built, but by 1881 when the plans had matured the institution was opened as the Buchanan Ophthalmic and General Cottage Hospital. Five years later the word ophthalmic was dropped from the name.

Bearing on the development of eye hospitals during the last third of the century, three observations are relevant.

(1) *The designation of eye hospital for an eye department of a general hospital.*—The Institutions at Devonport and at St. Leonard's probably illustrate this tendency, which, however, is more clearly seen at Torquay and Stoke-on-Trent. The General Hospitals at these two centres included in their names the designation of eye hospital or infirmary, but this only represented in both instances the opening of an eye department. At neither place was there at any time an independent unit. At Stoke-on-Trent the eye department was opened in 1890; the words " and eye hospital," then added to the name of Hartshill and North Staffordshire Infirmary, were discontinued in 1910. At Torquay an eye department was opened on May 15, 1894 and the expanded designation of Torbay Hospital Provident Dispensary and Eye Infirmary is still continued in the full name of the Institution.

(2) *Development of eye hospitals after 1889.*—There are only two instances to record. In 1905 the Guest Hospital at Dudley arranged with the Dudley Dispensary for the joint treatment of eye patients, the first institution dealing with in-patients and the second with out-patients. The " Dudley Eye Infirmary " thus came into being without having a separate physical existence. Since 1912 the whole of the work has been done at the Guest Hospital. In Eastbourne the Royal Eye Hospital was founded in 1928—the only foundation of its type since the years 1881-89 with their concentrated activity.

(3) *Hospitals for cases of infectious ophthalmia.*—The immense amount of trachoma in the Poor Law schools of the nineteenth century led to various ineffective attempts to isolate infected children within these schools. Ultimately a special isolation school was built at Hanwell in 1889, and the drastic changes in the administra-

tion of Poor Law schools that followed on the report of a departmental committee of the Local Government Board in 1897, finally led to the opening of White Oak Hospital, Swanley in 1903 and High Wood Hospital a year later, specially for the reception of Poor Law children suffering from trachoma. By 1918 High Wood had become superflous and was closed down as an ophthalmic school, and White Oak itself was half empty. The history of these hospitals, the almost total eradication of trachoma, and the development of White Oak into a children's eye hospital, national in scope but under the control of the London County Council, has been traced elsewhere.

St. Margaret's Hospital was opened by the London County Council in 1915 as the logical sequel to a General Order of 1914 which made ophthalmia neonatorum notifiable and imposed on the local authorities the duty to provide treatment or obtain evidence that satisfactory treatment was being given. As a war measure it was transferred to White Oak Hospital in September, 1939. The revolutionary changes in the treatment of ophthalmia neonatorum have made it unnecessary for the hospital to be re-opened as a separate institution.

The century in perspective

The creation of eye hospitals in the metropolis was largely confined to the years 1804-57, when nine eye institutions apart from the five existing to-day are known to have been established. In addition there was the antecedent St. John's Hospital for Diseases of the Eyes, Legs and Breasts established by William Rowley in Holborn in 1771-3 and three more founded in 1876, 1882 and 1884 that failed to survive. In the provinces the movement for eye hospitals started soon after it was initiated in London, but its impetus continued till 1889. In all fifty-two institutions were founded (Fig. 4) and twenty-three have survived (Fig. 5). Of the fifty-two established no less than sixteen were founded in the sixteen years 1808-23 and ten more in 1881-89, the concluding nine years of the movement. The movement thus began strongly and ended likewise. It came to an end abruptly in 1889 instead of ebbing away. The beginning and end were vigorous not only in the number of institutions established but also in the number of survivors engendered (Fig. 6). Of the twenty-three surviving institutions eighteen are eye hospitals of which eight were established in the years 1808-23 and four in the years 1880-89. Five have survived as eye and ear hospitals.

The eighteen surviving eye hospitals have bed complements ranging between 160 beds to none.

Institutions with less than fifty beds:—

Bristol Ophthalmic Dispensary (1812), none; Worcester City and County Eye Hospital (1841), 18 beds; Hereford, Victoria Eye Hospital (1883), 20 beds; Weymouth and Dorset County Royal

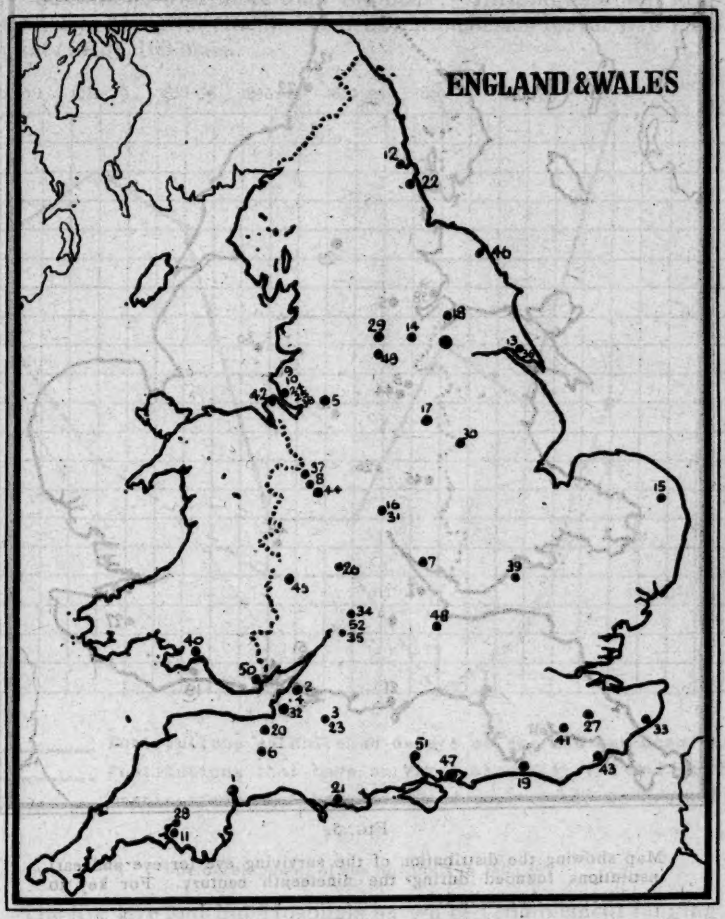

FIG. 4.

Map showing the distribution of eye (or eye and ear) institutions founded during the nineteenth century. For key to numbers, see Appendix I.

Eye Infirmary (1836), 21 beds; Southampton Free Eye Hospital (1889), 26 beds; Bath Eye Infirmary (1811), 29 beds; Plymouth Royal Eye Infirmary (1821), 30 beds; Newcastle-on-Tyne Eye

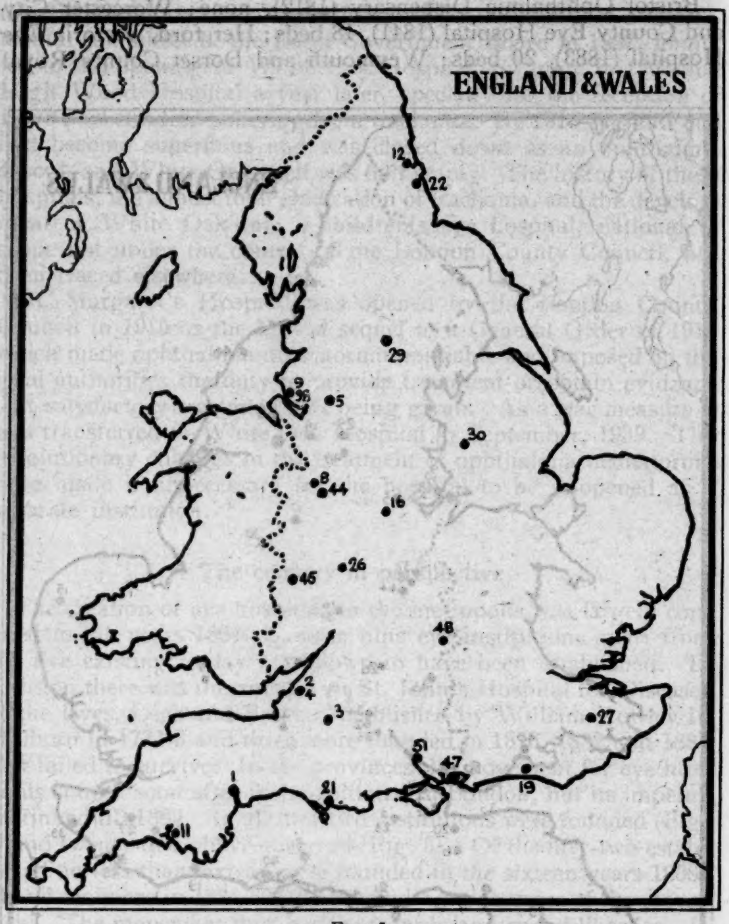

FIG. 5.

Map showing the distribution of the surviving eye (or eye and ear) institutions founded during the nineteenth century. For key to numbers, see Appendix 1.

Hospital (1822), 32 beds; Oxford Eye Hospital (1886), 36 beds; Sunderland, Durham County and Sunderland Eye Infirmary (1836), 41 beds; and Brighton, Sussex Eye Hospital (1832), 48 beds.

Institutions with 50-100 beds:—Exeter, West of England Eye Infirmary (1808), 55 beds; Nottingham and Midland Eye Infirmary

(1859), 56 beds; Wolverhampton and Midland Counties Eye Infirmary (1881), 70 beds; Bristol Eye Hospital (1810), 71 beds; and Liverpool St. Paul's Eye Hospital (1871) 83 beds.

Institutions with more than 100 beds:—Birmingham and Midland Eye Hospital (1823), 114 beds; Manchester Royal Eye Hospital (1815), 160 beds.

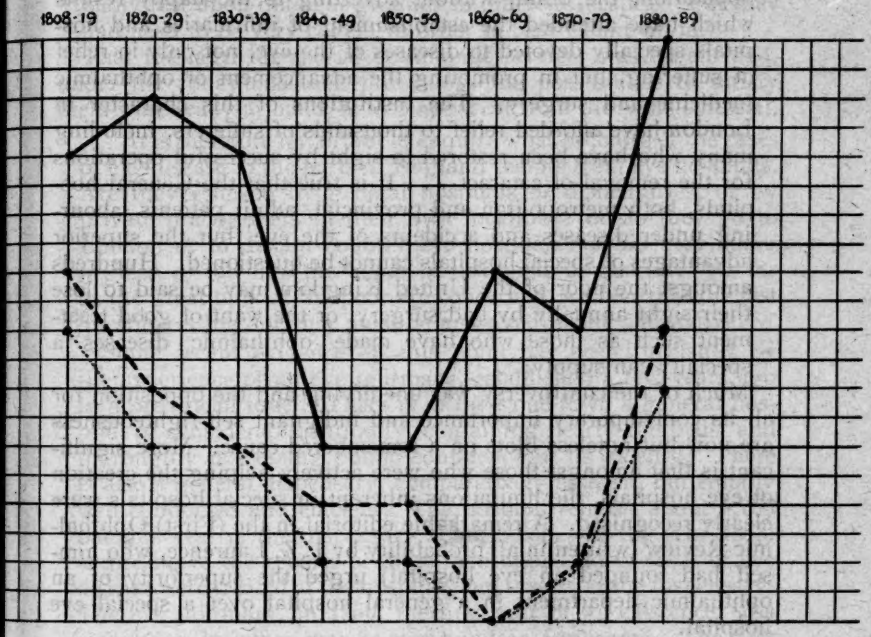

FIG. 6.

The development of eye hospitals in 1808-89.

The five Eye and Ear Hospitals have a bed complement ranging from 20 to 94 beds.

Portsmouth and Southern Counties Eye and Ear Hospital (1884), 20 beds; Shrewsbury Eye, Ear and Throat Hospital for Shropshire and Wales (1818) 20 beds; Liverpool Eye and Ear Infirmary (1820), 42 beds; Maidstone: Kent County Ophthalmic and Aural Hospital (1847), 56 beds: Bradford Royal Eye and Ear Hospital (1857), 94 beds.

Though the founding of eye hospitals excited fierce opposition from the profession as a whole, powerful support was not lacking. At the height of the controversy the Registrar General in his Report on the Census of 1861 came out strongly in favour of the eye hospitals.

> " We cannot close our remarks on this afflicted section of the population, the blind, without adverting to the happy results which have attended the establishment of infirmaries and hospitals specially devoted to diseases of the eye, not only in relief of suffering, but in promoting the advancement of ophthalmic medicine and surgery. The institutions of this character in London have afforded relief to thousands of sufferers, including many who have been restored to sight by successful operations for the removal of cataract . . . It is true that the General hospitals, both metropolitan and provincial, admit patients labouring under diseases and accidents of the eye, but the superior advantages of special hospitals cannot be questioned. Hundreds amongst the poor of the United Kingdom may be said to lose their sight annually by bad surgery, or the want of good treatment such as those who have made ophthalmic diseases a specialty can supply."

Much of the controversy was unedifying and the opposition for all its contemporary importance and indignant self-righteousness are now but noteless blots on a remembered cause. More significant is that amongst those who were actively helping the creation of eye hospitals, the limitations inherent in special hospitals were clearly recognised. A remarkable editorial in the (First) Ophthalmic Review (written in all probability by J. Z. Laurence, who himself had founded an eye hospital) urged the superiority of an ophthalmic department in a general hospital over a special eye hospital.

> " If we now turn our attention to the counties in which eye hospitals exist, it is impossible not to be impressed with the apparent waste of energy and means at which they are maintained. Of the twenty-five with which we are acquainted, twenty-four are in towns which contain general hospitals also; and yet the two kinds of institutions are kept separate. In the present day one great object of eye hospitals ought to be the diffusion of the results of modern work among the profession. It should be their province to show, more eloquently than by mere words, that ophthalmology will richly repay the labour of those who study it. It is obvious that their usefulness in this direction is much curtailed by maintaining them as distinct institutions—often with a very limited staff, often little visited by neighbouring practitioners. By combining them with general hospitals as the " Ophthalmic Department," they would

be placed much more prominently in the light of general medical observation, and would, we believe, soon be much more highly estimated than at present. At the same time it is plain that their establishment charges would be reduced; and that much labour would be saved to committees, secretaries, and the like. The objections to the fusion of existing institutions probably rest upon different grounds in different localities; but they had need to be very cogent in order to bear examination."

That the need for special ophthalmic services was urgent and, under the conditions then prevailing, the possibilities to satisfy them were ready at hand, is also apparent from the same editorial.

"It is therefore important to enquire what becomes of the cases of eye disease in the parts of England remote from eye hospitals. Are they relieved by general hospitals or dispensaries, or by private practitioners in their own localities? or do they go to London or to distant country eye hospitals? or do they suffer neglect, or fall into the hands of druggists or quacks? As far as the great bulk of the poor are concerned, we fear that the last question is the one that must be answered in the affirmative.

Some recent evidence on this point has been furnished by the experience of an eye infirmary, established a few years ago in a provincial town. There is in the same town a general hospital of considerable antiquity, containing nearly 150 beds, and thoroughly possessing public confidence in its locality. There is also a general dispensary, comparatively modern, but equally well conducted and efficient. The hospital relieves about 7,700 patients yearly, the dispensary about 8,250. In the year 1858, according to the reports of these institutions, forty cases of eye disease were treated at the hospital, and twenty at the dispensary. The eye infirmary, in 1859, the first year of its existence, was resorted to by more than twelve hundred applicants. The first report of the committee contains the following passage:—

'Without making mention of the numerous cases in which one eye only was affected, no less than twenty-four persons, all of whom were absolutely blind at the time of application, have been restored to sight, and enabled to return to their respective avocations. In one of these cases the patient had been living in the neighbourhood, as a blind man, for a period of ten years.'

It is quite evident, we think, that the officers of the new infirmary were called upon to deal with a large number of blind persons who had never sought the aid of the pre-existent medical charities.

Another country ophthalmic hospital, which contains 34 beds, and receives nearly 3,000 patients yearly, was founded about twenty years ago. We are informed that, prior to that time, the

number of cases of eye disease brought to the general hospital in the same town was very inconsiderable . . .

An eye dispensary, or an eye hospital, would bring these cases together; and there are few districts in which one might not be set on foot. For the reasons already mentioned, we should prefer to see such institutions connected with general hospitals or dispensaries; but, where circumstances forbid this, they will take root and flourish alone. They may in some places be made nearly self-supporting; and we feel sure that a judicious employment of the facts we have endeavoured to set forth will do much to secure for them the support of benevolent and discriminating persons. The patients applying would usually amount to about three per cent. of a town population, and the expense of medicine for out-patients would not exceed three shillings each. Beds would scarcely be needed, except for cases of operation; and in-patients ought not to cost more than ten shillings a week. Few in-patients would require to be kept more than a fortnight—many not so long; and thus, in a town of 10,000 inhabitants, a dispensary might be maintained for about £70 a year, that would bring together, in the same time, not less than 300 cases. If its surgeons so worked as to deserve and obtain reputation, it would soon bring together many more."

Broadly speaking the creative activities of the century have a consistent pattern, though hardly a pattern that the planned development of ophthalmology would have given. It was not altogether haphazard that the old established centres in South-Western England, some of the Cathedral and County towns, and the rising cities in the North and in the Midlands should have developed eye hospitals, but no planned development would have seen the opening of eye hospitals in some of the smaller places in which institutions—inevitably ephemeral as they proved—actually came to be established. The striking thing about the immense energy that went into the creating of fifty-two eye institutions, is how little of it was misspent: the eighteen eye hospitals surviving to-day are not the sum of the last century's labour. The movement for the creation of eye hospitals did more than create such institutions; it compelled the opening of eye departments in the general hospitals; it forced the pace in the development of ophthalmology outside the special eye hospitals; it was responsible for such public health measures as the creation of White Oak Hospital and St. Margaret's Hospital; and finally it gave British ophthalmology the organic shape it has to-day.

In assessing the course of events it is well to bear in mind that many of the fifty-two institutions were hardly hospitals in the modern sense. Some were little more than private clinics, and others, though public institutions wholly or in part, were still

largely individual enterprises. Inevitably such institutions lacking a corporate spirit tended to die with the dominant personality behind it. Pioneers are notoriously egocentric, and the surprising thing about the development of eye hospitals in the last century was the viability of so many institutions founded by energy and enthusiasm of single individuals. With a few possible exceptions these founders were men of high integrity; they differed from their more pedestrian colleagues who continued as general surgeons not in possessing an undue urge for notoriety or gain, but in feeling keenly the lack of organised facilities for the practice of ophthalmology. This we know to have been the case of Gregory in Sheffield, and Russell in York; and it was very likely the rule. It was not the failure in general surgery, but the man of spirit who founded an eye hospital. This is clearly brought out by the fact that almost invariably the early ophthalmologists in the provinces were eminent local surgeons.

Four factors, singly or in combinations, were responsible for the collapse of most of the eye hospitals no longer extant. The least viable—and least frequent—of eye institutions were purely personal ventures in geographically limited areas: the eye dispensary at Clun may be cited as an example. More commonly the death of an institution was determined by the actual or relative decline of the town—as was the case in York. Thirdly, too strong a personal dominance tended to be fatal, as was probably the case in Sheffield. Finally a special hospital could be overwhelmed by an active general hospital with a progressive policy: an adequate eye department in the local general hospital could—and probably did at Leeds and Cardiff—render the special hospital superfluous.

It has been said that the pathologist performing post-mortem examinations finds more often difficulty in knowing how the patient had continued to live than why he died. A somewhat similar difficulty arises in this study of deceased eye hospitals. It is not easy to see any reason for the immense vitality of the closing decade of the movement for eye hospitals.

My thanks are due to the many correspondents mentioned in the list of sources given below. But for their help this study would have been less complete, as it would have been altogether impossible without the constant collaboration of Miss Ann Lakeman in collecting the necessary basic data.

APPENDIX I—*Provincial eye hospitals founded during the nineteenth century*

	Date of foundation	Date of closing down	Population in thousands in nearest census year		Population in thousands in 1931 Census (existing institutions)
			At time of foundation	At time of closing down (where applicable)	
1. Exeter, West of England Eye Infirmary	1808	—	17	—	66
2. Bristol Eye Hospital	1810	—	71	—	397
3. Bath Eye Infirmary	1811	—	31	—	69
4. Bristol Ophthalmic Dispensary	1812	—	71	—	397
5. Manchester Royal Eye Hospiial	1815	—	89	—	766
6. *Taunton Eye Infirmary*	1816	1905	8	17	—
7. *Southam Eye and Ear Infirmary*...	1818	1872	1	2	—
8. Shrewsbury. Eye, Ear and Throat Hospital for Shropshire and Wales	1818	—	23	—	32
9. Liverpool Eye and Ear Infirmary	1820	—	138	—	856
10. *Liverpool: Institution for curing diseases of the eye*	1820	1834	138	201	—
11. Plymouth Royal Eye Infirmary	1821	—	21	—	208
12, Newcastle-on-Tyne Eye Hospital	1822	—	42	—	283
13. *Hull. Dispensary for curing diseases of the Eye and Ear*	1822	c. 1831	45	51	—
14. *Leeds Eye and Ear Infirmary*	1822	1869	84	259	—
15. *Norwich. Norfolk and Norwich Eye Infirmary* ...	1822	1925	80	154	—
16. Birmingham and Midland Eye Hospital	1823	—	102	—	1,002
17. *Sheffield Eye Dispensary*	1828	1874	91	239	—
18. *York Eye Institution*...	1831	1887	35	49	—
19. Brighton. Sussex Eye Hospital	1832	—	40	—	147
20. *Bridgwater Eye Dispensary*	1834	1850	7	10	—
21. Weymouth and Dorset County Royal Eye Infirmary ...	1836	—	7	—	22
22. Sunderland. Durham County and Sunderland Eye Infirmary	1836	—	17	—	185
23. *Bath Eye and Ear Dispensary*	1837	1916	38	81	—
24. *Liverpool Dispensary for Diseases of the Eye*	1838	1853	286	376	—
25. *Liverpool St. Anne's Eye and Ear Institution for the Eastern Division of the Town*	1839	1865	286	444	—
26. Worcester City and County Eye Hospital	1841	—	29	—	50

APPENDIX I—*continued*

26.	Worcester City and County Eye Hospital	1841	—	29	—	50

		Date of foundation	Date of closing down	Population in thousands in nearest census year: At time of foundation	Population in thousands in nearest census year: At time of closing down (where applicable)	Population in thousands in 1931 Census (existing institutions)
27.	Maidstone. Kent County Ophthalmic and Aural Hospital	1847	—	20	—	42
28.	*Devonport and Stonehouse General Dispensary and Institution for Diseases of the Eye and Ear*	1848	1935	38	70	—
29.	Bradford Royal Eye and Ear Hospital	1857	—	106	—	298
30.	Nottingham and Midland Eye Infirmary	1859	—	75	—	269
31.	*Birmingham Eye and Ear Infirmary*	1859	1870	212	343	—
32.	*Redland General Dispensary for Women and Children and Dispensary for diseases of the Eye and Ear* ...	1860	1887	2	5	—
33.	*Dover Eye and Ear Institution*	1860	c. 1863	16	16	—
34.	*Cheltenham and Gloucestershire Ophthalmic Infirmary*	1861	c. 1882	46	52	—
35.	*Gloucester. Gloucestershire Eye Institution*	1866	1878	16	16	—
36.	*Hull Eye and Ear Dispensary*	1867	1877	121	154	—
37.	*Clun Eye and Ear Dispensary*	1869	1874	2	2	—
38.	Liverpool. St. Paul's Eye Hospital	1871	—	493	—	856
39.	*Bedford Eye Dispensary*	1873	c. 1874	17	17	—
40.	*Swansea Eye Hospital*	1878	1888	50	57	—
41.	*Tunbridge Wells Eye, Ear and Throat Hospital* ...	1878	1935	24	35	—
42.	*Birkenhead Eye and Ear Dispensary*	1879	c. 1892	83	100	—
43.	*St. Leonards. Buchanan Ophthalmic and Cottage Hospital*	1881	1886	5	7	—
44.	Wolverhampton. Wolverhampton and Midland Counties Eye Infirmary	1881	—	76	—	133
45.	Hereford. Victoria Eye Hospital	1883	—	20	—	24
46.	*Scarborough. King's Cliff Hospital and Eye and Ear Hospital*	1883	c. 1897	30	38	—
47.	Portsmouth. Portsmouth and Southern Counties Eye and Ear Hospital	1884	—	128	—	249
48.	Oxford Eye Hospital	1886	—	33	—	81
49.	*Halifax Eye, Ear and Throat Hospital*	1886	1914	74	86	—
50.	*Cardiff Eye and Ear Hospital*	1887	c. 1895	174	174	—
51.	Southampton. Free Eye Hospital	1889	—	65	—	176
52.	*Cheltenham Eye, Ear and Throat Infirmary*	1889	1924	50	60	—

Names in italics are those of institutions no longer extant as eye (or eye and ear) hospitals

APPENDIX II

Notes on eye (or eye and ear) institutions no longer extant

BATH EYE AND EAR DISPENSARY.

1837-1916.

This was established in 1837 and the first entry in the Medical Directory appears in 1849 when W. Bush and T. Barrett, M.D., are named as Surgeons. The number of patients admitted in 1847 is given as 614. In 1853 the name of the Institution appears as Bath Eye and Ear Infirmary and the number of patients was 751. The entry for 1857 shows that the number of eye patients admitted was 340. The entry for 1870 shows W. Bush as the Surgeon and in 1875 Bush figures as Consulting Surgeon with L. G. King as Surgeon. W. A. Day succeeded King in 1899.

There is no record of inpatients having been admitted. Up to 1916 the Dispensary was conducted from one small room; in that year it became the Bath Ear, Nose and Throat Hospital, and now has 50 beds exclusively devoted to that specialty. Though the name of Eye and Ear Infirmary persisted until 1916, it appears that for many years previous to that, probably as far back as 1870, the Institution had not dealt with any eye work.

BEDFORD EYE DISPENSARY.

c. 1873-1874.

This Institution appears only twice in the Medical Directory, in 1873 and in 1874. Both entries show the Medical Officer as Dr. T. Gibson and give no further information. The Directory in 1873 shows Thomas Gibson as M.D. St. Andrews, 1860, M.R.C.S. Eng., and L.S.A., 1858 (Glasg.). He is described as Medical Officer and Founder of the Bedford Dispensary. The name of Gibson appears in the Directory from 1873 to 1887.

An Eye Department had existed at the County Hospital, Bedford, since 1894, originally under the charge of G. H. Goldsmith.

BIRKENHEAD EYE AND EAR DISPENSARY.

1879-c. 1892.

The first entry appears in the Directory in 1881 when C. H. Higgins, M.D., is given as Consulting Surgeon and T. S. Floyd, M.D., as Surgeon. The number of patients was 748. The name of C. Knox appears as an additional surgeon in 1883, and a year later the Institution is named the Birkenhead Eye and Ear Hospital and Dispensary, the number of patients now being given as 1,230. Four beds are shown in the entry in 1884, with 45 inpatients and 1,219 outpatients. No substantial changes appear until 1891, except that the name of M. W. O'Reilly, M.D., replaces that of Knox in 1886, O'Reilly in turn being replaced by B. B. Ferrar and J. Robertson in 1890, in which year the number of beds was given as six. In 1891 a note states that paying patients were received, and Floyd appears as Consulting Surgeon together with Higgins; the Honorary Surgeons being J. Pinkerton, M.D., and M. Wallace, M.B. In 1892 Floyd's name again appears amongst the Honorary Surgeons. The entry for 1891 was a reprint of that of a year previously, and there were no entries in 1894 and subsequently.

Thomas Sargent Floyd is described as the Founder of the Birkenhead Eye and Ear Dispensary in the biographical section of the Directory. This is borne out by a letter from Dr. W. R. Floyd, who states that as far as he remembers the Institution was started by Dr. T. S. Floyd with a Committee. He further states that Dr. Floyd was succeeded by Dr. Joseph Blood and with his withdrawal the end came. "How I don't know." The hospital was situated in Victoria Street.

BIRMINGHAM EYE AND EAR INFIRMARY.

1859-1870.

This first appears in the Medical Directory of 1861, and gives F. Jordan as Consulting Surgeon and J. W. Keyworth as Surgeon. A year later the title is Birmingham Eye and Ear Hospital with an address in Edmond Street. B. Hunt now figures as an additional Surgeon. In 1863 the address is Cambridge Street, and Jordan, Keyworth, Hunt and G. H. Marshall all figure as Surgeons.

There was no change in 1864 and 1865, the entries being a repetition of that given in 1863. In 1866 the name was expanded to include "and Free Dispensary." The date of its establishment is given as 1859; six beds are shown; the number of inpatients is 20 and that of outpatients 2,500. From the entries in 1867 and 1868 it appears that the address was now 97-99, Suffolk Street. In 1871 the name of J. St. S. Wilders appears amongst the Surgeons, the others being B. Hunt and F. Jordan.

The 11th Annual Report of the Eye and Ear Hospital for 1870 is extant. It states that 876 people have sought relief; 360 were suffering from affections of the eye, and 516 from deafness and diseases of the ear (similar figures are available for 1869; there were 398 eye inpatients with 1,299 attendances, and 508 ear patients with 2,520 attendances). There was a favourable balance of £28 7s. 8d. at the end of the financial year. Some 12,000 had availed themselves of the Institution during the 11 years of its existence, and the Report expresses satisfaction at the fact that the hospital was now free from all debt. The Report also recommends that the hospital amalgamate with the Birmingham Ear and Throat Infirmary. The Eye Department was apparently absorbed by the Birmingham and Midland Eye Hospital. The amalgamation with the Birmingham and Midland Ear and Throat Hospital involved some rearrangement of staff. Benjamin Hunt and J. St. S. Wilders became Surgeons to the Ear and Throat Hospital, their other colleague being Dr. Chas. Warden. The Annual Report for 1869 shows that the receipts for the year were £103 2s. 7d. and the payments £80 9s. 2d. In 1870 the corresponding figures were £152 9s. 11d. and £124 2s. 2d.

In its short life the Birmingham Eye and Ear Hospital had to contend with two hospitals devoted to the two specialties separately, the Birmingham Eye Infirmary having been established in 1823, and the Ear Infirmary in 1844. The Eye Infirmary was a flourishing Institution at the time the Eye and Ear Infirmary was established in 1859. It had 50 beds, 421 inpatients and 5,011 outpatients. The Ear Infirmary was not quite so well established. There may have been personal factors underlying the establishment of the Eye and Ear Hospital, but it is difficult to accept at its face value the implications contained in the subjoined extract from the notes on Medical Charities of Birmingham in the Birmingham *Daily Gazette* in 1863. The standing of Furneaux Jordan, Benjamin Hunt and John St. S. Wilders makes such a reading excessively simple; all three were prominent in the medical life of Birmingham, Furneaux Jordan having a national reputation and Hunt being the first Surgeon to the Ophthalmic Department to the Queen's Hospital, whilst Wilders was Surgeon to the Queen's Hospital in addition to being Professor of Materia Medica at Queen's College, Birmingham.

THE EAR INFIRMARY, AND THE EYE AND EAR HOSPITAL.

Extract from No. III on Hospital Management and Administration of the Medical Charities of Birmingham, by Scrutator.

With regard to the Eye and Ear Hospital, in Cambridge Street, it is difficult to think of it without indignation. Why was it founded? The magnificent Eye Institution was in full work; the Ear Infirmary was in active operation.

Is it conceivable that its founders, unsuccessful in their endeavours to represent an existing establishment of a kindred class, could yet delude themselves into the belief that this new institution was needed by the public?

To found an Institution for the relief of two classes of disease, for the treatment of both of which competent special institutions already existed in the town, was an act for which there was no jot of palliation.

Did either of these fail in discharging the duties they were founded to fulfil? If so, what were their shortcomings, and did the promoters of the present Institution "*draw public attention, in an unmistakable manner to these shortcomings*"?

There was no vestige of a reason, based on public interests, for the establishment of this petty dispensary. Dispensary was its name till last year, when the frog endeavoured to blow itself into the dimensions of an ox by going into debt for bedding and calling itself a Hospital.'

As far as its Ear Department is concerned, it is naturally not favoured by its rival in Cherry Street, and the Institutions, I am informed, are not on speaking terms.

The annual income of 1862 was £40 9s., the expenditure was £44 18s. 4d. besides £90 worth of bills left unpaid. It could not exist a month if it had not a building rent free, and there is no reason that it should exist an hour.

Its founders were too wise to appoint a single medical officer; but one of them admitted on all hands to be an able man, was first appointed Consulting Surgeon, and is now an ordinary Surgeon. Who first appointed the medical officers, and who authorised the change?

The accounts have been audited by a gentleman of ability and reputation; but is there any species of Committee in Europe, except the Board of a Medical Charity, who would allow their accounts to be audited by a single person, and that person a member of the Committee, and of course responsible for the expenditure?

However, unless an Institution, however manifest that it never was and never can be, a public Charity, one would think that its Managers would, at least, go through the *form* of propriety in statements issued to the world.

BRIDGWATER EYE DISPENSARY.

1834-c. 1850.

The Medical Almanack for 1837 states "that the Dispensary was erected in 1834 by J. Toogood, Surgeon, and supported solely at his expense. It contains 4 beds and would contain many more; a spacious room serving as a laboratory and museum is attached." The entries in the Almanack for 1838 and in 1839 are a repetition.

J. Toogood also figures in the entries for the Bridgwater Infirmary. His name is given in each of these years as the Senior Surgeon, his appointment dating back to 1813. Two other Surgeons shown in the entries were J. G. Toogood, 1835, and J. C. Parker, 1835. The Bridgwater Infirmary was established in 1813 by J. Toogood and in 1837 is shown as having 35 beds.

The Eye Dispensary appears in the Medical Directories for 1847, 1848 and 1849. The entry for 1847 shows that it has 6 beds and that the Surgeons were J. G. Toogood and J. Parsons. The average number of inpatients is shown as 156 and the number of outpatients as 1,157. The entry for 1849 is a repetition, and there is no entry in 1850 for either the Bridgwater Infirmary or the Eye Dispensary. The entry for 1851 speaks of the Bridgwater Infirmary as having 40 beds, and carries a note "The Eye Dispensary is now incorporated with this Institution." J. G. Toogood and J. Parsons figure with three others as surgeons to the Infirmary.

J. Toogood, Esq., figures in the list of Members of Council of the Provincial Medical and Surgical Association given in the Almanack for 1839.

CARDIFF EYE AND EAR HOSPITAL.

1887-c. 1895.

The first entry appears in the Medical Directory in 1888, when W. A. Brailey is given as Consulting Surgeon and J. Milward and H. C. Ensor as Surgeons. There does not appear to have been any beds, and in the only year in which the number of patients is given, the figure was 1,500. The address of the hospital is given as 18, Charles Street in the entry in 1892. No fresh returns appear in the subsequent years, and the hospital disappears from the Directory altogether in 1898, but had probably ceased to exist earlier (?1895). The local Directories for Cardiff carry an advertisement in the years 1878-1888 and 1894-1895. The address was as stated above, and the name of the Matron is given as Mrs. Campbell.

The Glamorganshire and Monmouthshire Dispensary and Infirmary, founded in 1837, had 180 beds by 1898. In 1887 an ophthalmic department in the care of

J. Tatham Thompson was opened in 1887, whilst H. C. Ensor was appointed Assistant Surgeon in 1895. It is possible that the Cardiff Eye and Ear Hospital was absorbed by the Cardiff Royal Infirmary (the successor of the Glamorganshire and Monmouthshire Dispensary and Infirmary). Such absorption is suggested by the appointment of Ensor to the Eye Department of the Infirmary. It seems that J. Milward, Ensor's sole colleague at the Ear and Eye Hospital, retired from practice or died at about 1895.

CHELTENHAM AND GLOUCESTERSHIRE OPHTHALMIC INFIRMARY.

1861-c. 1882.

On its first appearance in the Directory in 1864 the date of its establishment is given as 1861. There were 8 beds; the Consulting Physician was Dr. T. R. Colledge, the Surgeon J. Davies, and Assistant Surgeon J. Bubb. The number of outpatients was given as 500. The name of Davies disappears in the entry in 1869, when Bubb is shown as Surgeon and A. Smith as Assistant Surgeon. In 1872 Smith's name is missing and is replaced by that of C. J. Bennett. The entry in 1881 still shows Bubb as Surgeon and Bennett as Assistant Surgeon. The number of outpatients is still given as 500 and the number of beds 8. In 1882 the number of beds is shown as 6 and the number of outpatients as 230. The entry in 1883 is a repetition of the one a year before, and the Institution disappears from the Directory the following year.

In the entries in the Directories between 1864 and 1885 Bubb is shown as Surgeon to the Cheltenham General Hospital and Dispensary, and Assistant Surgeon (later Surgeon) to the Cheltenham and Gloucestershire Ophthalmic Infirmary. C. J. Bennett also served both these Institutions so that the contact between them must have been close; it is possible that the Ophthalmic Infirmary was ultimately absorbed by the Cheltenham General Hospital. This, however, could not be checked. It is worth noting that A. Smith also figures as Surgeon to Cheltenham Eye, Ear and Throat Infirmary established in 1889.

The following extract from G. A. Cardew's "Echoes and Reminiscences" shows that the Institution was founded by Dr. Walter Jessop, and obtained the support of Thomas Richardson Colledge and John Davies. Jessop died in 1862.

"Dr. Thomas Richardson Colledge died at Lauriston House, Cheltenham, October 28th, 1879, aet. 82. Educated at Rugby, apprenticed to Dr. Marshall of Leicester, for five years he was appointed to H.E.I.C.S. and was sent to Canton, remaining there for twenty years. He there founded the Colledge Ophthalmic Hospital and was the first to introduce Medical Missions to China. In 1841 he settled in Cheltenham where he practised for thirty-eight years, and was a busy and valued practitioner. Dr. Davies was Surgeon to the Regiment 49th foot and served with it in the Crimea. He was especially mentioned in the dispatches for his good services by Lord Raglan, who attributed the health and strength of the 49th Regiment during the campaign to the excellent arrangements by Dr. Davies for the care of his men and the cleanliness and efficiency of his hospital. After retiring from the Army he settled in Cheltenham in 1862, when he became Hon. Surgeon to the Cheltenham and Gloucestershire Ophthalmic Infirmary. At his death in 1868 his books and instruments were presented to the Institution. I ought to mention Dr. Walter Hamilton Jessop, 1853, F.R.C.S., of No. 3 Royal Crescent. He was the father of Dr. Hylton Jessop, the well known eye specialist, who was Hon. Ophthalmic Surgeon to St. Bartholomew's. Dr. Walter was the founder of the first Cheltenham Eye Hospital in St. George's Place. He died at the early age of 34 of pneumonia."

CHELTENHAM EYE, EAR AND THROAT INFIRMARY.

1889-1924.

This first appears in the Directory of 1892 and gives the date of establishment as 1889 when there were 4 beds. The Consulting Surgeon was Lennox Browne, the Surgeon A. A. Smith, and Assistant Surgeon S. W. Smith, M.D.; the number of inpatients was 42 and that of outpatients 709. A. Smith served till 1894, when John A. Bower was appointed Surgeon.

The early activities of the Infirmary are reflected in the following figures:—

	No. of In-patients	No. of Out-patients
1892	42	709
1894	56	721
1900	173	707

In 1909 an Eye, Ear, Nose and Throat Department was opened at the Cheltenham General Hospital to which Dr. Norman Pike was appointed. In 1910 the name of the special hospital appears as Cheltenham Eye, Ear and Throat Free Hospital, and in June, 1922, an agreement was reached between the General Hospital and the Special Hospital for the formation of a Joint Board to govern the two Institutions as from 1st January, 1924, when the amalgamated Hospitals became known as the Cheltenham General and Eye Hospitals.

The work of the Eye, Ear, Nose and Throat Department of the General Hospital was taken over by the special hospital. Both John Bower and Norman Pike continued to serve till 1933, Pike having reached the age limit of 60 years in that year and Bower having continued to serve beyond his age limit for 7 years. In 1936 the old Eye, Ear, Nose and Throat Hospital in North Place was sold and a new Eye, Ear, Nose and Throat Department was erected on the grounds of the General Hospital.

John Bower was largely responsible for the amalgamation of the two institutions and was prompted by his desire to have separate wards for eye patients and ear, nose and throat patients. The combined resources of the two hospitals were, he felt, more likely to achieve this.

CLUN EYE AND EAR DISPENSARY.

1869-1874.

The first entry appears in the Directory in 1871 when J. Welsh is shown as Surgeon. The entry in 1872 gives the year in which it was established and shows the number of beds as three, and the number of outpatients as 93. The entry in 1873 is a reprint, and that for 1874 shows Welsh as Consulting Surgeon and E. S. Lane as Surgeon. There were no subsequent entries.

Cassey's "Shropshire" for 1871 gives Dr. Welsh's address in Clun as "The Eye and Ear Dispensary."

The present Cottage Hospital at Clun dates back to about 1890.

DEVONPORT AND STONEHOUSE GENERAL DISPENSARY AND INSTITUTION FOR DISEASES OF THE EYE AND EAR.

c. 1848-1935.

This Institution figures in the Directory for 1848 and gives the following staff: Physician Extra.: Sir George Magrath, M.D., F.R.S.; Physicians: George Glasson and C. W. Tripe; Surgeons: Rolston, May, Burrows, Crossing, F. Row, M.D. and R. J. Laity. Apothecaries: Little and Bennett. No substantial changes occurred in the subsequent years except the name of Tripe disappears from 1852 onwards, and that of Burrows from 1856. In 1861 the title is changed by the replacing of the words "General" before Dispensary by "Public." The average number of patients is shown as 1,000. An extensive reorganisation seems to have taken place in 1861, and from 1864 the Institution was known as the Royal Albert Hospital and Eye Infirmary for Devonport, Stonehouse, Cornwall and West Devon. The Annual Report of 1864 speaks of the hospital having been instituted in March, 1861, and the report itself is regarded as the First Annual Report of the Royal Albert Hospital and Eye Infirmary for Devonport, Stonehouse, Cornwall and West Devon.

A perusal of these reports shows that a considerable number of the activities of the hospital centred around its being a lock hospital. There was apparently a fairly strong tradition of eye work, for of the 95 operations listed in the First Annual Report in 1864, 41 are given as having been operations on the eye. This preponderance rapidly disappeared in subsequent years. In fact, the Third Annual Report shows the development of another specialty—children's diseases—the name of the hospital now being the Royal Albert Hospital, the Eye Infirmary and Children's Ward for Devonport, Stonehouse, Cornwall and West Devon. In 1864

the number of beds was given as 90. By 1870 it had increased to 212. The number of beds in 1880 is shown as 218 and only as 92 in 1882, and 62 in 1890. This apparently came about from a separation from the Military and Naval Lock Hospital. In 1876 the number of ophthalmic outpatients was given as 106, a year later as 183 and in 1879 as 287 with no substantial changes for several years subsequently when separate entries were no longer recorded. The first Ophthalmic Surgeon appears to have been J. R. Rolston, who figures in the entry for 1889, and whose name still appeared in 1904. In 1907 W. H. Davis was appointed Assistant Ophthalmic Surgeon. In 1935 the Hospital was still known as the Royal Albert Hospital and Eye Infirmary and appears under that name in the Medical Directory. Extensive reorganisation took place in 1936 when the Royal Albert Hospital and Eye Infirmary, Devonport, together with the former Central Hospital and the South Devon and East Cornwall Hospital were amalgamated to form the Prince of Wales Hospital, Plymouth. Very little ophthalmic work had been done at the Devonport Hospital since 1941, when it was decided that because of the staffing difficulties, and the fact that there is in Plymouth a fully equipped and staffed Eye Infirmary, it was not possible and practical to keep open the department at Devonport during the war.

DOVER EYE AND EAR INSTITUTION.

1860-c. 1863.

This Institution figures in the Directories of 1861 and in three subsequent issues. The entry in 1861 states that it was established in 1860 and that the Consulting Surgeon is C. R. Cutmore. In the following year the number of outpatients is given as 200. There was no change in the entry for 1863, and that for 1864 is a reprint of the previous one, no return having been made.

Charles Richard Cutmore was M.R.C.S. Eng., and L.M., 1858 (St. Mary's). He disappears from the provincial directory in 1864 and figures in the London list from 1863 to 1870. From 1864 onward the entry against his name carries the description of Late Surgeon, Dover Eye and Ear Institution.

GLOUCESTERSHIRE EYE INSTITUTION, GLOUCESTER.

1866-78.

The Institution was situated in the Market Place, Gloucester. In 1869 there were 7 beds; the number of inpatients was 73 and that of outpatients 483. The number of outpatients remained fairly stationary, that of inpatients declined (63 in 1870, 35 in 1871, 29 in 1872, 32 in 1873, 50 in 1878).

Staff.—Robert Brudenell Carter: Surgeon in 1869 (? also earlier), Consulting Surgeon, 1870-78. William F. Keddell: Assistant Surgeon in 1869 (?also earlier), Surgeon, 1870. Rayner W. Batten: Acting Medical Officer, 1873-78. Thomas S. Ellis: Acting Medical Officer, 1873-78. Richard Mount Cole: Acting Medical Officer, 1877-78.

Fused with Gloucestershire General Infirmary on August 22nd, 1878, to become the Gloucestershire General Infirmary and Eye Institution with Ellis and Cole as Ophthalmic Surgeons and Batten as Ophthalmic Physician.

Whilst R. B. Carter does not appear to have had any association with the Gloucestershire General Infirmary, there seems to have been close collaboration between the Eye Institution and the Infirmary, for Rayner Batten was a physician at the Infirmary from 1867-99, T. S. Ellis a Surgeon from 1868-78, Keddell a Surgeon from 1869-72, and Cole 1875-76. Keddell had died in 1875, whilst Ellis and Cole both became Consulting Surgeons. According to Hirschberg, the Gloucestershire Eye Institution was founded by W. H. Hyett, F.R.S. Hyett figures as a Vice-President of the Gloucestershire General Infirmary during 1867-76, the material years of the existence of the Eye Institution.

HALIFAX EYE, EAR AND THROAT HOSPITAL.

1886-1914.

The hospital was founded by John Oakley in 1886. It first appears in the Directory for 1897, when John Oakley was its Surgeon and E. H. Hackett the Assistant Surgeon. The number of inpatients in 1897 was 66 and that of outpatients 1,129. No substantial changes appear in the subsequent entries except

that the name of E. H. Hackett is replaced by that of G. Gardiner Oakley, the son of John Oakley. In 1911 there were 2,395 outpatients and 71 inpatients. There were 4 beds. The Eye, Ear and Throat Hospital was essentially the creation of John Oakley who founded it after the Halifax Infirmary declined his suggestion that an eye and ear department to which he offered his services should be opened. The Eye and Ear Hospital was an annexe of Oakley's residence. In the 28 years of existence it had served 1,422 inpatients and 44,350 outpatients. 13,058 operations have been performed. By 1914 expansion and rebuilding had become necessary and could not be carried through.

In 1898 an Eye Department was established at the Halifax Royal Infirmary under the care of Samuel Lodge. In 1911 it had 1,313 outpatients.

HULL DISPENSARY FOR CURING DISEASES OF THE EYE AND EAR.

1822-c. 1831.

William White's Directory of Hull, 1831, contains a reference to this institution which is stated to have been established in 1822 by T. Buchanan, C.M., "and is still continued at his surgery, No. 17 Myton Gate, where patients are admitted from 10 to 2 o'clock every Tuesday and Friday. Mr. Buchanan is a Member of Glasgow University."

Further information on Buchanan is contained in Charles Frost's address to the Hull Literary and Philosophical Society, November 5th, 1930.

"Mr. Thomas Buchanan, C.M., M.W.S.E., etc., a native of Edinburgh, has for the last eleven years practised as a surgeon and aurist in this town. He lectured at Glasgow, in 1816, on the anatomy of the organs of vision and hearing; and since his residence among us, he has published the following works connected with his profession, viz. a 'Guide to Acoustic Surgery,' in 1823; 'Illustrations of Acoustic Surgery,' in 1825; 'Physiological Illustrations of the Organ of Hearing,' in 1828; and 'An Essay on a new Mode of Treatment for Diseased Joints and the non-union of Fracture' in the same year."

HULL EYE AND EAR DISPENSARY.

1867-c. 1877.

This Dispensary figures in the Medical Directories of 1870-1883. The entry in 1870 states that it was established in 1867 and that the Surgeon was A. Macmillan, M.D., Assistant Surgeon A. Wilson. The number of patients is given as 350. In 1873 the number of patients had risen to 2,365 and the post of Assistant Surgeon is shown vacant in 1876. The entries between 1877 and 1882 are identical to that of 1876, no return having been made for those years. The Dispensary disappears from the Directory in 1883.

Angus Macmillan was Surgeon to various minor Charities in Hull, and was the author of a small treatise "On the Preservation of Sight."

Dr. D. Matheson Mackay kindly writes that he remembers Macmillan, but never heard of the Eye and Ear Dispensary. It seems that Macmillan's Dispensary was a short-lived private venture.

The first public Eye Department at Hull appears to have been the Ophthalmic Department of the Hull Royal Infirmary opened in 1887 with Dr. W. C. Rockliffe in charge. Dr. Mackay also writes that Dr. Rockliffe's father—Dr. Lunn—who was on the staff of the Infirmary, did eye work, and it is likely that he was regarded as one specially versed in eye work before his son was appointed ophthalmic surgeon.

LEEDS EYE AND EAR INFIRMARY.

1822-1869.

The Medical Almanack for 1837 gives the names of the Surgeons as W. Hey, C. Nelson and T. S. Rusby. The entries in 1838 and 1839 are repetitions. In the Medical Directory for 1847 the names of the Surgeons are Hey, Nunneley and Braithwaite, with Mr. C. Hey as Elaboratorian. Braithwaite's name is replaced by that of Atkinson in 1848, and the name of the Elaboratorian was Joseph Walker. There were no changes in the three subsequent years, and in 1852 the number

of beds is given as 5 and Hey's name is replaced by that of Land. The number of inpatients is given as about 30 and that of outpatients over 1,000 per annum. In 1854 the number of inpatients is given as 50 and a year later the number of outpatients is placed at over 1,500. There were no subsequent changes in the entries until 1861, when Mr. Johnson figures as Elaboratorian, who in turn is replaced by Mr. Mills in 1863 and by Mr. Walker in 1865. The entry for 1868 shows the number of beds still as 6, with Mr. Nunneley as Consulting Surgeon and Messrs. Land, J. A. Nunneley, M.B., and J. Seaton as Surgeons. The Elaboratorian was Mr. Coates, the number of inpatients 57 and of outpatients 1,800. The figures were slightly higher in the next year when they were 60 and 2,200 respectively. There was no change in the entry for 1870.

Amalgamation with the Leeds General Infirmary took place in 1869.

The Eye and Ear Infirmary was situated in Kirkgate, opposite what is now the Market and was then known as Vicar's Croft. In about 1850 it was moved to the corner of Park Lane and Somers Street.

Thomas Nunneley served the Eye and Ear Infirmary from 1835-1864, when he was appointed General Surgeon to the Leeds General Infirmary and was succeeded by his son, John Nunneley, as Surgeon to the Eye and Ear Infirmary. The newly established Eye and Ear Department at the Leeds General Infirmary showed in 1871 Thomas Land as Consulting Surgeon, whilst the staff of the Eye and Ear Infirmary—J. A. Nunneley, J. Seaton and K. T. Land—figure as Surgeons to the department. It was not till 1912 that this department became subdivided into two distinct services.

It is difficult to assess what were the relationships between the Eye and Ear Infirmary and the General Infirmary. William Hey was, of course, a prominent member of the staff of the Leeds General Infirmary, whilst Braithwaite was lecturer in Midwifery at the School of Medicine. Though Thomas Nunneley ultimately became General Surgeon at the Leeds General Infirmary, this only happened after 30 years of service at the Eye Infirmary, and five years before the amalgamation between the two institutions took place.

LIVERPOOL

ST. ANNE'S DISPENSARY AND EYE AND EAR INSTITUTION FOR THE EASTERN DIVISION OF THE TOWN.

1839-1865.

The first entry of this Dispensary in the Medical Directory appears in 1851. The Honorary Officers were Messrs. Nottingham, M.D., Harris, Cattell, Padley, Taylor, Balman. The annual number of patients is shown as 10,000. In 1855 the words "for the Eastern Division of the Town" disappeared from the name of the Institution.

In subsequent years till 1864 a steady increase in the number of patients is shown, reaching 15,600 in 1864. There were some slight changes in the staff, and the name of T. Bickerton appears as one of the Honorary Medical Officers from 1856 to 1863. The last entry, that of 1865, is a repetition of the one in 1864 when J. Nottingham is shown as Hon. Consulting Surgeon, and the names of the Medical Officers were J. P. Harris, A. Whittle, E. T. Evans, A. C. Hughes, A. Wigglesworth and W. G. Jones, M.D.

Mrs. P. Hodson, the Secretary of the Liverpool Dispensaries, kindly supplied the following information on the early history and the end of St. Anne's Dispensary.

The Dispensary was opened in 1839 in Islington. It moved to Rose Hill in 1854 and does not appear to have had any connection with the Liverpool Dispensary till 1865. (The Liverpool Dispensaries consisted at that time of a South Dispensary at 1, Upper Parliament Street, opened in 1822, and a North Dispensary in Vauxhall Road opened in 1831. The central organisation itself was established in 1878.)

The Annual Report of the Liverpool Dispensaries for the year 1865 refers to the Resolution passed at the previous Annual Meeting empowering the Committee to purchase the House in Richmond Row for the establishment and maintenance of a third Dispensary there. This third Dispensary, known as the East

Dispensary, was opened in the spring of 1865 and Thomas Carey was appointed its President. He "had been one of the main promoters and liberal supporters of the St. Anne's Dispensary, whose functions, on a greatly enlarged scale, your present new Dispensary now discharges."

The report goes on to speak of the staff of Honorary Medical Officers appointed to the East Dispensary, they were "chiefly the gentlemen who had for many years previously given their gratuitous services in the same capacity to the St. Anne's Dispensary." The staff as shown in the 1886 report consisted of J. P. Harris, Dr. Slack, Mr. A. C. Hughes, A. Whittle, M.D., Dr. Goodall Jones and Mr. A. Wigglesworth. All these names with the exception of that of Dr. Slack figured in the staff of the St. Anne's Dispensary.

It is difficult to assess how active the St. Anne's Dispensary was in ophthalmology. The Dispensary was founded by Nottingham, and this would suggest a considerable ophthalmic interest, further strengthened by the inclusion of Thomas Bickerton amongst the staff.

The East Dispensary of the Liverpool Dispensaries still exists to-day at 160, Richmond Row, Liverpool, 3.

LIVERPOOL DISPENSARY FOR DISEASES OF THE EYE.

1838-1853.

This Institution was opened privately by Robert Hibbert Taylor on November 26th, 1838, in Great Crosshall Street, but within a month was moved to 5, Marylebone. Taylor gives the following account of its organisation in his recollections:—

"The Dispensary was open three days in the week for the admission of patients, from 1 till 2 o'clock, and in that interval a number used to assemble sufficient to occupy me for a couple of hours. The patients were supplied with medicine gratis at first, and I was assisted in making them up and in marshalling the patients by my Scotch man-servant, John Churton, who became quite an adept at the business, and in my absence would not have scrupled, if allowed, to undertake the duties of doctor himself. During the time that the Dispensary was located in Great Crosshall Street, and at 5, Marylebone, to which it was subsequently removed, viz. from 1838-1846, upwards of 10,000 new cases passed through my hands. In 1847 I removed the Dispensary to Great George Street, as being nearer my residence. . . . In this locality it was carried on till September 23rd, 1853, when it was finally closed, and I joined the 'Eye and Ear Infirmary,' as one of the Medical Officers. The total number of new cases entered in the Dispensary books, up to the above date, is 17,841.

"The expenses were chiefly borne by myself, aided by a few subscriptions from friends, and the payment of one penny from each patient when first entered in the book, and afterwards on obtaining a fresh supply of medicine. This sufficed to pay the cost of the medicines at least."

LIVERPOOL INSTITUTION FOR CURING DISEASES OF THE EYE.

This Institution was established on June 12th, 1820, with the help of William Rathbone. It was housed at 30, Basnett Street, and was open on Tuesdays, Thursdays and Saturdays.

Alexander Hannay was Physician, and Ralph Brackenbury, Joseph Brandreth and William Loftus were Surgeons at the time of its foundation. None of these names appears on the list of the original staff of the Ophthalmic Infirmary, also founded in 1820, which has since become the Liverpool Eye and Ear Infirmary.

NORFOLK AND NORWICH EYE INFIRMARY.

1822-1925.

Though established in 1822, this Hospital does not figure in the Almanacks for 1837-1839. The Medical Directory for 1851, in which year the Hospital first appears, shows it to have 9 beds, and that the Surgeons at the time were B. H. Norgate and G. W. Firth; the annual number of the patients was about 300; the

number of beds in 1856 was 14. In 1886 the number is still shown as 14, but as 20 in 1889. The Infirmary still figures in an independent entry in the Directory of 1944, the number of beds being shown as 20 with 2 cots. The annual number of patients in 1857 is given as 350, and fluctuated between that number and 500 up to 1888 when the number was 893, but appears to have fallen to around 500 in subsequent years. The number of inpatients was 86 in 1867, 136 in 1886 and 200 in 1894.

The Infirmary was founded on January 11th, 1822, by Drs. Evans, Hull and Thomas Martineau, Jn. L. Evans, R. Hull and Thomas Martineau were the first three Surgeons, Evans serving from 1822-1852, Hull from 1822-1839 and Martineau in 1822-1823. Martineau died in 1824. The subsequent Surgeons were:—

Arthur Browne, 1823-27.	S. H. Burton, 1882-1913.
James Martineau Lee, 1827-	T. H. North, 1882-1891.
B. H. Norgate, 1827-c. 1857.	C. J. Muriel, 1891-1925.
G. W. Firth, 1839-1878.	A. A. Greene, 1907-41.
Charles Goodwin, 1857-	G. Maxted, 1913-
H. S. Robinson, c. 1873-1907.	W. E. Rutledge, 1926-

In October, 1925, amalgamation between Norfolk and Norwich Eye Infirmary and the Norfolk and Norwich (General) Hospital was effected. Provision was made for a Joint Committee to manage the two hospitals. The Eye Infirmary is now under the management of the Norfolk and Norwich Hospital, and the facilities of the two hospitals are at the disposal of each other. Appointments to the staff of the Eye Infirmary are made by the Election Committee of the General Hospital.

In 1830 the Norwich Eye Infirmary and two other Charities applied to the Norfolk and Norwich Hospital to be allowed to share in the profits of the triennial Musical Festival. This was at first refused, but three years later they were allowed a quarter of the profits between them. (The total receipts were £36.)

REDLAND GENERAL DISPENSARY FOR WOMEN AND CHILDREN AND DISPENSARY FOR DISEASES OF THE EYE AND EAR.

1860-1887.

This Dispensary first appears in the Directory in 1871 and shows W. Bush as Physician and W. Smith as Consulting Surgeon. The number of patients is given as 3,912. In 1884 there was a slight change in the title, the name now being Redland General Dispensary for Women and Children and for Diseases of the Eye and Ear. In 1888 the title is Redland Dispensary, and in 1890 is described as the Redland Branch Dispensary.

It is not clear whether this institution served from the beginning as an Eye and Ear Dispensary, or whether the name that first appears in 1871 represents the fusion of originally two separate institutions.

W. Smith appears to have served as Consulting Surgeon from 1871 (or earlier) till 1876 when he was succeeded by J. S. Metford who served till 1887. It also appears that T. Webster served as Surgeon from 1876-1887, E. A. Lawrence 1874-1887, C. Elliott 1876-1885 and F. C. Hawkins from 1885-1887. William Bush also served as Physician to the Bath Eye and Ear Dispensary.

KING'S CLIFF HOSPITAL AND EYE AND EAR INFIRMARY, SCARBOROUGH.

1883-c. 1897.

The first entry of this Institution appears in the Directory for 1894. The number of beds is given as 16, and the Medical Officers were F. Dale and M. Foley. The Ophthalmic and Aural Surgeon was F. Dale. The number of inpatients was shown as 144 and that of outpatients as 1,034. The year of its establishment is given as 1883. The entries for 1895, 1896 and 1897 are identical. There are no subsequent entries and it appears that the Institution was financed by the Dowager Lady Sitwell, and it is likely that it came to an end with her death.

In 1896 Dr. F. Dale was elected Ophthalmic and Aural Medical Officer to the Scarborough Hospital and Dispensary and served till his resignation in 1900 when Dr. R. Cuff succeeded him.

SHEFFIELD EYE DISPENSARY.

1828-1874.

This Institution was established by Samuel Gregory in 1828 at 17, Eyre Street. Some few years later it moved to Cheney Row. It ceased to be an Eye Dispensary in 1874, the patients being transferred to the Sheffield General Dispensary. The Sheffield Town Hall was subsequently built on the site in Cheney Row.

Surgeons: S. Gregory, 1828-58; E. D. L. Gillott, c. 1841-74; George Kemp, c. 1863-74; H. H. Snell, c. 1874.

Gregory was elected Surgeon to the General Infirmary in 1848, but there was no Eye Department at the Infirmary till 1872 when Simeon Snell was appointed to it. Gillott's contact with the Sheffield Medical School was confined to his lecturing on anatomy for some time. Kemp too was connected with the Sheffield Medical School as lecturer on Materia Medica.

This account of the Sheffield Eye Dispensary is based on the entries in the Medical Directories and the biographical note on Gregory in Plarr's Lives. Prof. A. M. Connell has kindly supplied information extracted from the local directories which conflict with those given here. According to the local directories the Eye Dispensary "was established by Dr. Charles Farrell and a few charitable friends" in 1833. The local directories also carry an entry of the institution for the years 1876 and 1879, when George Kemp's name is replaced by that of Simeon Snell. The entry for 1880 shows 10, Cheney Row, as an Ear and Throat Hospital.

It is unlikely that there were two eye dispensaries at Sheffield in spite of the discrepancy in the date of establishment and closing down, for the local directories give Gregory and Gillott as the Surgeons to the Institute throughout the material years of its existence. The Dispensary does not appear to have been very flourishing. The number of patients for 1864 was 1,300 and 1,361 for 1876.

SOUTHAM EYE AND EAR INFIRMARY.

1818-1872.

Founded in 1818 by Henry Lilley Smith, M.R.C.S. Smith figures as the only Surgeon in the entries in the Medical Almanack and Medical Directories until 1859 when his name is replaced by that of Mr. Ruttledge. The Medical Almanack for 1839 gives C. Wake, P. F. Lenard, A. Middleton, J. Rann, A. Robertson and J. Connolly as Physicians. It further states that the distinguishing feature of the Infirmary is the self-support of the inpatients. Men pay 6s., women 5s., and children 4s. or 3s. 6d. per week for their board.

The Medical Directory for 1850 gives J. G. K. Burt, M.D., as Physician. His name is missing in the subsequent year. In 1855 six names appear as serving in the capacity of Honorary Physicians: J. Connolly, H. Homer, H. Powell, A. Robertson, T. Thomson and S. Wise. In 1860 only the names of Homer, Powell and Thomson appear. In 1865 the name of E. Welchman figures together with that of Rutledge, but in the subsequent year this is missing. In 1868 the name of the Institution appears as Southam Eye and Ear Infirmary and District Hospital, and in 1870 Southam Eye and Ear Infirmary and Cottage Hospital. It is shown as having 24 beds. Minor changes in the names of the staff appear in 1870 and 1872. There is no change in the entry in subsequent years until 1882 when no entry at all appears.

The history of the Southam Eye and Ear Infirmary centres essentially around the life of its founder, H. L. Smith. Dr. R. J. Cyriax has kindly supplied the following information:

The Infirmary was founded on April 13th, 1818, and it appears that Smith was the only surgeon until after his death in 1859 at the age of 71 or 72. In 1863, four years after Smith's death, the Infirmary was enlarged to provide a Cottage Hospital as well. The Infirmary was built on ground belonging to Smith and annual subscriptions supported it with voluntary contributions. Financial difficulties became insuperable after Smith's death; in 1869 an appeal was made for

£400, but on December 31st, 1872, the Eye Infirmary and Cottage Hospital was closed. The building in which it was situated is still in existence as a private residence.

The Eye and Ear Infirmary was only one of Smith's many activities—and apparently not a very significant one to himself or his contemporaries, for the inscription on his tombstone at Southam does not mention it. Smith's interest in ophthalmology was presumably incidental to his interest in originating and furthering the movement for provident dispensaries.

ST. LEONARD'S: BUCHANAN OPHTHALMIC AND COTTAGE HOSPITAL.

1881-1886.

An appeal brochure published in 1888 gives the following information:

"The eye department of the Hastings and St. Leonard's Homœopathic Dispensary, opened two years previously, has so increased that a demand arose for the effective treatment, either surgically or medically, of the more severe cases in a hospital. The want prompted the late Miss Buchanan to suggest the building of a Cottage Hospital. She did not live to see her kindly desires fulfilled, but her niece, Miss Mirrlees, generously determined to carry this out, offered a sum of money with that object.

"With this nucleus, the idea of starting a small hospital for the treatment of ophthalmic cases was formed, and the proposal met with such hearty support that it was quickly decided to enlarge the scope of the proposed hospital, and whilst providing by special wards for the treatment of diseases of the eye, to admit general serious medical and surgical cases."

The name appears to have been changed to the Buchanan Cottage Hospital in 1886, and more recently to the Buchanan Hospital. The ophthalmic origin of the hospital is evidenced by the original statutes still in force, which enjoin that two beds should always be available for ophthalmic cases. Interest in homœopathy appears to have been shown by the original medical officer and some of his successors.

From April, 1881 to February, 1884, the hospital was situated at 24, Southwater Road, and had 6 beds. In 1884 it moved to Springfield Road and had 15 beds and 2 private wards.

C. T. Knox Shaw (who was also a trustee and a member of the Board of Management) appears as Medical Officer in the first entry in the Medical Directory (in 1884).

SWANSEA EYE HOSPITAL.

1878-1888.

The hospital developed out of a clinic in a schoolroom established by Jabez Thomas, who settled in general practice in Swansea in 1865. This clinic, proving inadequate for the needs of the town and district, led to the establishment of the Swansea Eye Hospital in 1878. Thomas rented a small house in Mansel Street, where consulting rooms and waiting rooms, with 2 beds for inpatients, were available. In 1880 larger premises were acquired at Herbert Place allowing for more extensive outpatient facilities and for twelve beds. The hospital was supported by voluntary contributions and had a lay and medical Committee.

In 1884 Alexander Deas Davidson, one of Nettleship's assistants at St. Thomas's, was appointed on Nettleship's recommendation as Surgeon to the hospital, to work together with Thomas. The work had been increasing steadily; in 1884 there were 442 outpatients and 51 inpatients; two years later the numbers were 700 and 134 respectively; whilst in 1888 (the last entry in the Medical Directory) the number of outpatients was given as 682 and that of inpatients as 111. The hospital at Herbert Place now being inadequate, plans were drawn up and approved on April 16th, 1888, for a new building to be erected in St. Helen's Road. Prior to this, in February, 1887, the Committee of the General Hospital approached the Eye Hospital to discuss amalgamation of the two institutions, but no agreement could be reached and the negotiations came to an end in April. These negotiations were re-opened in August, 1888 (" the General Hospital alarmed at the probability of the diversion of

some of their subscriptions to the new 'Eye Hospital'"). On December 27th, 1888, amalgamation was agreed on, the terms being substantially the same as those which had previously been turned down. These terms provided for the re-naming of the Joint Institution as the Swansea General and Eye Hospital, that the Ophthalmic Department of the amalgamated institution be "under the sole medical charge of the present Eye Hospital staff, without in any way interfering with their present appointments on the staff of the General Hospital," a condition agreed upon on the understanding that it applied to Messrs. Jabez Thomas and Alexander Deas Davidson personally, and not to their successors.

The new ophthalmic block was built in the grounds of the General Hospital in St. Helen's Road, and was opened on July 24th, 1890. Thomas and Davidson having been appointed Ophthalmic Surgeons to the joint hospital, continued to serve till retirement in 1900, and they were succeeded by Frank G. Thomas, a son of Jabez Thomas, as sole Ophthalmic Surgeon.

The records of the Swansea General Hospital show that in 1880 an Ophthalmic Department was established and Dr. Thomas Drusley Griffith was appointed Ophthalmic Surgeon to the hospital on December 26th, 1880. He held this position until 1885, and was succeeded by William T. F. Davies, who served from November, 1885, to July, 1888.

It would appear that the establishment of the Swansea Eye Hospital stimulated the development of an Ophthalmic Department at the General Hospital, and that moreover there was close contact between the two institutions from the beginning for Jabez Thomas was General Surgeon to the General Hospital whilst holding the post of Surgeon to the Eye Hospital, and continued to serve as Surgeon and Ophthalmic Surgeon to the amalgamated institutions.

TAUNTON EYE INFIRMARY.

1816-1905.

This institution was founded by James Billet in 1816. For the year March, 1835-36, 486 outpatients were seen, the total for 1816-36 being 7,364.

In 1847 when it first appears in the Medical Directory J. Billet is shown as Surgeon. There were 7 beds and the average number of inpatients was 42 and of outpatients 479. No substantial changes appear in subsequent years, except that in 1858 the total number of patients treated since the foundation is given as 17,700, and in 1865 S. Farrant figures as Surgeon together with Billet. The number of inpatients is shown as 22 and of outpatients 619.

In 1875 there were 12 beds, 50 inpatients and 500 outpatients. No significant changes are given in the returns for subsequent years, the last entry appeared in 1895.

The institution became a public charity in 1854 when James Billet transferred the "house and garden situated at Shuttern in the Parish of St. Mary Magdalen, Taunton" to trustees acting for "the Taunton Eye Infirmary for the residence and relief of poor persons afflicted with diseases of the eye or ear."

Dr. Charles Farrant, a son of Samuel Farrant, gives the following information:—

Samuel Farrant was the only surgeon to the Taunton Eye Infirmary for as long as he can remember. He took outpatients every Saturday until his death on July 18th, 1903. Patients were admitted for operation, mostly cataracts and enucleations. Vision was tested and glasses ordered, but no refractions were done. A nurse and her sister lived in the building and boarded the inpatients. On his father's death he continued the work at the Infirmary, but the Institution had serious financial difficulties. There were no subscriptions coming in, and there was a claim of £300 by the Nurse for boarding patients. Ultimately an application was made to the Charity Commissioners who, after enquiring from the Taunton and Somerset Hospital if the work could be transferred to them, ordered the building and furniture to be sold, and any surplus left to be paid to Taunton and Somerset Hospital. Dr. Charles Farrant himself was appointed Surgeon to the Hospital in 1909, and though there was no special eye department, he did some eye work there.

That there was close association between Taunton Eye Infirmary and the Taunton and Somerset Hospital is clear from the fact that Samuel Farrant was Surgeon to both Institutions.

The indenture of 1854 whereby the Institution became a public charity, shows that the Eye Infirmary also treated ear conditions.

TUNBRIDGE WELLS EYE, EAR AND THROAT HOSPITAL.

1878-1935.

From its foundation in 1878 till 1896 the hospital was served by George Abbott, who was succeeded by E. H. Myddleton-Gavey, who, in turn, was succeeded by David Davies in 1904. Davies was the third and last Surgeon, serving till 1935, when the hospital amalgamated with the Tunbridge Wells General Hospital to form the Kent and Sussex Hospital at Tunbridge Wells. Up to 1901 it was situated at the Pantiles and subsequently at Mount Sion.

Originally the hospital was a dispensary only. In 1888 two beds became available and the name was changed from Dispensary to Hospital. The Medical Directory shows three beds in 1889 and six beds in 1890; in 1910 there were fourteen beds, in 1914 fifteen beds. At the time of its fusion in 1935 the number of beds was 22. In 1885 the number of outpatients (ophthalmic, and ear, nose and throat) was 302; in 1896, 718, and this number increased steadily year by year to 3,078 in 1913, fluctuating slightly around that figure in subsequent years. The number of in-patients in 1896 was 62 and rose steadily to reach 368 in 1909, and a slightly higher level in the immediate subsequent years, reaching 391 in 1924. After that, there was a marked increase, the peak figure being 814 in 1928.

Prior to the amalgamation which took place in 1935, there was no eye, ear, nose and throat department at Tunbridge Wells General Hospital. The opening of such a department was considered by the General Hospital as an alternative to amalgamation with the Eye, Ear and Throat Hospital.

YORK EYE INSTITUTION.

1831-1887.

The first entry in the Medical Directory appears in 1876 and gives the date on which it was established as 1831. This date is also given by Hirschberg, who stated that from 1831 to 1877 13,000 outpatients had been seen, no provision having been available until that year for inpatients. A small hut with two beds was then erected, but in 1884 only three patients could be admitted owing to financial difficulties. The information as regards two beds tallies with that given in the Medical Directory for 1880. Hirschberg also states that the first Physician was Dr. Goldie, and that the Surgeon was Henry Russell, who held his post until his death in 1854, when William Reed was appointed and in turn was succeeded by Alfred Ball in 1867. Ball served until 1874 when Tempest Anderson became Surgeon. Anderson served the Institution until its amalgamation with the York County Hospital in 1887, and continued as Ophthalmic Surgeon to the amalgamated Institution until 1904, when he was succeeded by Peter Macdonald.

Though the York Eye Institution does not figure under this title in the Medical Directory until 1876, there can be little doubt that the reference to the York Eye and Ear Institution which appears from 1869-74 refers to the York Eye Institution, and that there was no York Eye and Ear Institution as an independent organisation.

The entry in the Medical Directory for 1869 gives A. Ball as the Surgeon. There are no substantial changes in the remaining entries. That the original name of the Institution was York Eye Institution is obvious from the notice of a meeting of the Committee of this Institution dated December 26th, 1839, kindly loaned to me by Dr. Peter Macdonald. It would, therefore, appear that some time between 1839 and 1869 the addition of "Ear" in the title of the Institution was effected; that the entry is not a misprint in the Directory is clear from the description in the Directory of Alfred Ball in the years 1869-1894 as Surgeon (or late Surgeon) to the York Eye and Ear Institution.

The limited inpatient facilities of the York Eye Institution and the small number of patients seen annually (385 in 1869, 521 in 1887, 615 in 1872 and 500 in 1880) was probably responsible for the absorption of this Institution by the York County Hospital.

It appears that the Institution was founded by Henry Russell, its first surgeon, who was also a surgeon to the County Hospital.

APPENDIX III

Biographical notes on ophthalmologists mentioned in APPENDIX II

ABBOTT, GEORGE (-).—L.R.C.P. Lond., 1869; M.R.C.S. Eng.; L.S.A., 1869.
Original Surgeon to Tunbridge Wells Eye and Ear Hospital, 1878-96; was also for a time Surgeon to the Central London Ophthalmic Hospital.

ANDERSON, TEMPEST (1846-1913).—B.Sc. Lond., 1867; M.D., 1873; M.B. and B.S., 1868; M.R.C.S. Eng., 1868; L.S.A., 1867 (Univ. Coll.).
Born at York. Was a Fellow of University College, London. Travelled extensively abroad. Numerous contributions on seismology. Tyndall lecturer at Royal Institution on volcanoes. Author of "Volcanic Studies," 1902. Investigations on housing and preservation of open spaces. Died of typhoid fever after returning from the Philippines.
Last Surgeon to the York Eye Institution (1874-87). First Ophthalmic and Aural Surgeon to York County Hospital (1887-1904).

ATKINSON, HENRY MILES (1802-1868).—M.R.C.S. Eng., 1830; L.S.A., 1829 (St. Barts.).
Surgeon Leeds Eye and Ear Infirmary, c. 1848-c. 1868.

BALL, ALFRED (1826-1895).—M.R.C.S. Eng., 1849; L.S.A., 1852 (Lond. Hosp.).
Surgeon to York Eye and Ear Institution, 1867-1874. Was at a time lecturer on botany at York Medical School.

BALMAN, THOMAS (1818-1868).—M.R.C.S. Eng., 1839; L.S.A., 1840.
Surgeon to St. Anne's Dispensary, Liverpool. His publications dealt mainly with scrofula and do not appear to have had any ophthalmic interest.

BARRETT, THOMAS (1816-1868).—M.D. Aberdeen, 1854; M.R.C.S., 1837; F.R.C.S., 1852; J.P.
Surgeon to the Bath Eye and Ear Infirmary, c. 1847-c 1868. Appears to have been mainly interested in otology.

BATTEN, RAYNER W. (1835-1909).—M.D. Lond., 1860; M.R.C.S. Eng., 1857 (St. Barts.).
Served at Gloucestershire Eye Institution 1873-78 and at Gloucestershire General Infirmary as Ophthalmic Physician from 1867-99.

BENNETT, CHAS. JOHN (-).—M.R.C.S. Eng.; L.S.A., 1868 (St. Barts.).
Assistant Surgeon to Cheltenham and Gloucestershire Ophthalmic Infirmary, 1872-c. 1882. At one time Senior Surgeon to Cheltenham General Hospital.

BICKERTON, THOMAS (1826-1872).—F.R.C.S. Edinb., 1865; L. 1851 (Liverp. and Glasg.).
Was attached to both St. Anne's Dispensary, Liverpool, and to the Eye and Ear Infirmary, Liverpool. Contracted typhus during epidemic in Liverpool in 1847.

BILLET, JAMES (1787-1877).
Was a Surgeon in practice prior to the Act of 1815. In addition to founding the Taunton Eye Infirmary, he was Surgeon to the Taunton Hospital, Somerset. Many publications on theological subjects.

BLOOD, JOSEPH (-).—B.A. Dubl.; M.B. and M.Ch., 1875; L.M.P.C.P.I., 1875 (T.C. Dubl.).
Does not appear to have had extensive ophthalmic interests. Had wide colonial experience. Surgeon to Birkenhead Eye and Ear Dispensary, c. 1890.

BOWER, JOHN ALEX. (-).—M.B., C.M. Edinb., 1890 (Univ. Edinb.).
Surgeon to Cheltenham Eye and Ear and Throat Infirmary, 1894-1927. Ophthalmic Surgeon Cheltenham Eye and General Hospitals, 1927-33.

BRACKENBURY, RALPH (-).
Surgeon, Liverpool Institution for Curing Diseases of the Eye, 1820- ?

BRAILEY, WILLIAM ARTHUR (-1915).—M.A., M.D. Cantab., 1874; M.B., 1871; M.R.C.S. Eng. and L.S.A., 1872; B.A. Lond., 1866 (Guy's and Cambr.).
Though his name figures as a Consulting Surgeon to Cardiff Eye and Ear Hospital, his professional career centred around his appointment as Ophthalmic Surgeon to Guy's Hospital.

BRANDRETH, JOSEPH (fl. c. 1820).
Surgeon to Institution for Curing Diseases of the Eye, Liverpool, 1820- ? . Surgeon, Liverpool Infirmary, 1801-26.
(It is not clear what the relationship of Joseph Brandreth was to Dr. Joseph Brandreth, Physician to the Liverpool Infirmary, 1780-1810, and Dr. J. P. Brandreth, likewise Physician to that institution, 1810-1839, and Consulting Physician, 1839-58.)

BRAITHWAITE, WILLIAM (1807-1885).—M.R.C.S., 1829; L.S.A., 1828.
In addition to acting as Surgeon to the Leeds Eye and Ear Infirmary in c. 1847-8, he was also lecturer on midwifery at the Leeds Medical School.

BROWNE, ARTHUR (-1827).
Assistant Surgeon at Norfolk and Norwich Hospital, 1826-27. Surgeon to Norfolk and Norwich Eye Infirmary, 1823-27.

BROWNE, LENNOX (1841-1902).—F.R.C.S. Edinb., 1873; M.R.C.S. Eng., 1863 (Edinb., St. George's and Middx.).
Consulting Surgeon to Cheltenham Eye and Ear Infirmary, 1889-c. 1892. Published extensively on otological subjects.

BUBB, JOHN (1839-1890).—M.R.C.S. Eng., 1860; L.S.A., 1861 (King's Coll.).
Surgeon to Cheltenham General Hospital and Dispensary, 1864-1885. Assistant Surgeon, Cheltenham and Gloucestershire Ophthalmic Infirmary, 1861-c. 1862.

BUCHANAN, THOS. (-).—Grad. Glasgow, 1822; C.M.
Practised in Hull for 11 years or more. Appears to have been mainly interested in otology.

BURROWS, ISAIAH (-).—M.R.C.S. Eng., 1832; L.S.A., 1831.
Surgeon to Devonport Stonehouse Publ. Dispensary and Institution for Diseases of the Eye and Ear, 1848-c. 1852. Does not appear to have had any ophthalmic interests.

BURT, JOHN G. K. (-).—M.D. Edinb., 1828.
One of the Physicians to the Southam Eye and Ear Infirmary. Antiquarian interests.

BURTON, SAMUEL HERBERT (1854-1929).—M.B. Lond. and B.S., 1876; F.R.C.S. Eng., 1881; M., 1876 (Univ. Coll.); J.P.
Surgeon to Norfolk and Norwich Eye Infirmary, 1882-1913. Surgeon to Norfolk and Norwich Hospital and chairman of its Board of Management. Wide general rather than ophthalmic interests.

BUSH, WILLIAM (-1888).—M.R.C.S. Eng.; L.S.A., 1837.
Physician to Bath Eye and Ear Dispensary. Physician to Redland General Dispensary for Women and Children and Dispensary for Diseases of the Eye and Ear, c. 1847-c. 1875.

CARTER, ROBERT BRUDENELL (1828-1918).—F.R.C.S. Eng., 1864; M., 1851; L.S.A., 1852 (Lond. Hosp.).
Surgeon to Gloucestershire Eye Institution, 1869 (?1866) -1870. Eminent Victorian ophthalmologist whose career centred around his appointment as ophthalmic surgeon to St. George's.

CATTELL, THOMAS WILLIAM (-).—M.R.C.S. Eng. and L.S.A., 1831.
Surgeon to St. Anne's Dispensary and Eye and Ear Institution, Liverpool, 1839-c. 1865.

COLE, RICHARD MOUNT (-).—L.R.C.P. Lond., 1868; M.R.C.S. Eng. and L.S.A., 1868 (Guy's).
Acting Medical Officer, Gloucestershire Eye Institution, 1876-78. Surgeon to Gloucestershire General Infirmary, 1875-1898. Ophthalmic Surgeon, Gloucestershire Infirmary, 1878-1883.

COLLEDGE, THOMAS RICHARDSON (1797-1879).—M.R.C.S., 1819; M.D. Aberdeen, 1839; F.R.C.P. Ed., 1840; F.R.S.E., 1844; F.R.C.S., 1853.
A pioneer in medical missions to China, where he founded the Colledge (? Ophthalmic) Hospital. Settled in Cheltenham, 1841. Consulting Physician to Cheltenham and Gloucestershire Ophthalmic Infirmary, 1861-c. 1879.

CROSSING, THOMAS (1798-1879).—M.R.C.S. Eng. and L.S.A., 1819.
Surgeon to Devonport and Stonehouse Dispensary and Institution for Diseases of the Eye and Ear. Does not appear to have had any ophthalmic interests.

CONNOLLY, JOHN (1796-1866).—M.D. Edinb., 1821; Hon. D.C.L. Oxford, 1852; F.R.C.P.
One of the Physicians to Southam Eye and Ear Infirmary. Extensive publications on general medical subjects.

CUTMORE, CHARLES RICHARD (-).—M.R.C.S. Eng. and L.M., 1858 (St. Mary's).
Surgeon to Dover Eye and Ear Institution, 1860-c. 1863. Does not appear to have published anything on eye diseases.

DALE, FREDERIC (1857-1913).—B.A. Cantab., 1878; M.D., 1883; M.B., 1880; L.R.C.P. Lond., 1879; F.R.C.S. Eng., 1882; M., 1879; J.P.
Surgeon to King's Cliff Hospital and Eye and Ear Infirmary, Scarborough, ? 1883-c. 1897. Subsequently Ophthalmic Medical Officer to Scarborough Hospital. Taught anatomy for a time at Cambridge.

DAVIDSON, ALEX. DEAS (? 1849-1900).—M.D. Cantab., 1880; M.R.C.S. Eng. and L.S.A., 1877 (St. Thomas').
Surgeon to Swansea Eye Hospital, 1884-88. Ophthalmic Surgeon to Swansea General Hospital, 1888-1900.

DAVIES, DAVID (-1945).—M.B. Lond., 1899; M.R.C.S.; L.R.C.P., 1898 (Univ. Coll., Lond.).
Surgeon to Eye and Ear Hospital, Tunbridge Wells, 1904-1935. Consulting Ophthalmic Surgeon, Kent and Sussex Hospital, Tunbridge Wells, 1935-1945.

DAVIES, JOHN (1817-1868).—F.R.C.S. Eng., 1854; M.R.C.S., 1839 (St. George's).
After an Army career retired with rank of Staff-Surgeon Major in 1860. Settled in Cheltenham where he became Surgeon to Cheltenham and Gloucestershire Ophthalmic Infirmary.

DAY, WILLIAM ALOYSIUS (? -1932).—M.R.C.S. Eng., 1880; L.R.C.P. Edinb. and L.M., 1887.
Surgeon, Bath Ear and Eye Infirmary, 1899-1932.

ELLIOTT, CHRISTOPHER (-).—B.A. Dub., 1870; M.D., 1875; M.B., 1871; L.R.C.S., I., 1872 (T.C., Dub.).
One of the medical attendants at Redland Dispensary for Women and Children and Dispensary for Diseases of the Eye and Ear. Does not appear to have had any ophthalmic interests. Was at one time demonstrator of anatomy at Bristol School of Medicine.

ELLIS, THOS. S. (-).—M.R.C.S. Eng. and L.S.A., 1861 (St. Bart's.).
Acting Medical Officer, Gloucestershire Eye Institution, 1873-1878. Ophthalmic Surgeon, Gloucestershire General Infirmary, 1878-1881. Surgeon to same Institution, 1868-78.

ENSOR, HENRY COLLEN (1859-1910).—M.R.C.S. Eng., 1885; L.S.A., 1884 (Guy's).
Surgeon, Cardiff Eye and Ear Hospital, 1887-1895. Ophthalmic Surgeon, Cardiff Royal Infirmary, 1895-1910.

EVANS, EVAN THOMAS (1824-1865).—M.R.C.S. Eng. and L.M., 1855; L.M. Dub., 1853.
One of the Surgeons to St. Anne's Dispensary, Liverpool. It is not known whether he had any ophthalmic interests.

EVANS, LEWIS (1785-? 1856).—M.D. Edinb., 1805.
One of the founders of Norfolk and Norwich Eye Infirmary which he served as Surgeon, 1822-1852. Physician to Norfolk and Norwich Hospital.

FARRANT, CHARLES, D.S.O. (-).—M.R.C.S., M.R.C.P. Lond., 1896 (Westm.).
Surgeon, Taunton and Somerset Hospital since 1909. Helped his father and succeeded him as the last surgeon to the Taunton Eye Infirmary.

FARRANT, SAMUEL (1838-1903).—M.R.C.S. Eng. and L.S.A., 1860 (St. Thomas).
Surgeon, Taunton and Somerset Hospital. Surgeon, Taunton Eye Hospital, 1865-1903.

FARRELL, CHARLES (1779-1855).—M.R.C.S., 1805; F.R.C.S., 1843. (One of the original 300 Fellows.) M.D. Edinb.
Had a distinguished military and surgical career. Inspector General of Hospitals, 1830. Retired 1833, having seen Service in the Peninsula, where he had been Surgeon for 2 years to a military ophthalmic hospital. After retirement he lived at Loughrea, Ireland. May have helped in the founding of the Sheffield Eye Dispensary. Published "*Observations on Ophthalmia and its consequences*," London, 1811.

FERRAR, BENJAMIN BANKS (-1894).—B.A. Dub., 1885; M.B., B.Ch., 1886 (T.C., Dub.).
Surgeon, Birkenhead Eye and Ear Dispensary, 1890-1. It is not known whether he had any ophthalmic interests.

FIRTH, GEORGE WARREN WATTS (? -1878).—M.R.C.S. Eng., 1836; F.R.C.S., 1845; L.S.A., 1835 (St. Bart's.).
Surgeon to Norfolk and Norwich Eye Infirmary, 1839-78. Surgeon to Norfolk and Norwich Hospital, 1854-1878.

FLOYD, THOMAS SARGENT (-).—B.A. Dub., 1869; M.A., 1879; M.D., 1875; M.B., 1871; L.R.C.S., I., and L.M., 1871. (T.C., Meath Hosp., St. Mary's Ophthal. Hosp., Dub.).
Surgeon to Birkenhead Eye and Ear Disp., 1879-c. 1892, and its founder. Had been a resident pupil of Sir William Wilde at St. Mark's Hosp., Dublin.

FOLEY, THOMAS MCCRAITH (1859-1924).—L.R.C.P., I., 1887; L.R.C.S., I., 1880; L.A.H. Dub., 1881.
Associated with Dale at Scarborough King's Cliff Hospital.

GIBSON, THOMAS (1835-1888).—M.D. (St. Andrew's), 1860; M.R.C.S. Eng., and L.S.A., 1858, Glasgow.
Founder of Bedford Eye Dispensary. Justice of the Peace for Westmorland. Contributed papers on the history and meteorology of Westmorland.

GILLOT, EDWARD DUNAGE L. (-1886).—M.R.C.S. Eng., 1831; L.S.A., 1830 (St. Bart's. and R.C.S., Dubl.).
Surgeon to Sheffield Eye Dispensary, c. 1841-c. 1874. At one time lecturer on anatomy at Sheffield Medical School.

GLASSON, GEO. (-).
One of the Physicians to the Devonport and Stonehouse Publ. Dispensary and Institution for Diseases of the Eye and Ear. It is not known whether he had any ophthalmic interests.

GOLDIE, GEO. (1786-1853).—M.D. Edinb., 1808.
Physician, York County Hospital, 1822-33. Published articles on general medicine.

GOODWIN, CHAS. (-1888).—M.R.C.S. Eng., 1845; L.S.A., 1834 (St. Bart's.); J.P.
Surgeon to Norfolk and Norwich Eye Infirmary, 1859-1881. Con. Surg. 1882-1888.

GREGORY, SAMUEL (1800-1858).—L.S.A., 1826; M.R.C.S., 1827; F.R.C.S., 1843. (One of the original 300 Fellows.)
Was apprenticed to William Staniforth, Senr., one of the first three surgeons elected to the Sheffield General Infirmary when first opened in 1797, and who had a local reputation as an oculist, "Staniforth's Eye Ointment" being widely known. After studying at Moorfields, he opened a small house at 17, Eyre Street, as the Sheffield Eye Dispensary in about 1827. This he served till his death in 1858, being assisted by E. D. L. Gillott from 1841 (or earlier). Taught anatomy at the Sheffield Medical School in 1835. Surgeon to Sheffield General Infirmary, 1848-58.

HACKETT, EDWARD HAWKESWORTH (-).—L.R.C.P. Edinb.; L.R.C.S. Edinb.; L.F.P.S. Glasgow and L.M., 1892.
Asst. Surgeon to Halifax Eye, Ear and Throat Hosp., c. 1897-1919.

HANNAY, ALEX. (-).—M.D. Edinb., 1812.
Physician to Liverpool Northern Hospital.

HARRIS, JAMES PENN (1817-1892).—M.R.C.S. Eng; L.S.A., 1841.
One of the Surgeons to Liverpool St. Anne's Dispensary. Engaged in general practice. It is not known whether he had any ophthalmic interests.

HEY, WILLIAM (1796-1875).—M.R.C.S., 1818.
This is presumably William Hey I., one of the founders of Leeds Medical School and one of the most eminent general surgeons of the last century.

HIGGINS, CHARLES HAYES (1811-1898).—M.D., 1849; M.R.C.P. Lond., 1859; F.R.C.S. Eng., 1844; M., 1834; L.S.A., 1834.
Before settling in Birkenhead, Higgins had been surgeon to the Somerset County Hospital. Published papers on surgery and obstetrics.

HOMER, HENRY (-1882).—M.D. Edinb., 1841; M.R.C.S. Eng., 1840; L.S.A., 1840.
One of the Physicians to Southam Eye and Ear Infirmary.
It is not known whether he had any ophthalmic interests.

HUGHES, AMBROSE C. (1824-1883).—L.R.C.S., I.; L.A.C. and L.M. Dub., 1855.
One of the Physicians to St. Anne's Dispensary, Liverpool. Was also Physician to Stanley Hospital. It is not known whether he had any ophthalmic interests.

HULL, ROBERT (1795-1856).—M.D. (Lambeth); L.R.C.P.
One of the three original founders and surgeons of Norfolk and Norwich Eye Infirmary, 1822-1839. Physician to Norfolk and Norwich Hospital.

HUNT, BENJAMIN (1827-1883).—M.R.C.S. Eng., 1849; L.S.A., 1852 (Univ. Coll.).
Ophthalmic Surgeon, Queen's Hospital, Birmingham, 1862-1863. Surgeon to Birmingham Eye and Ear Infirmary, 1862-70. On the absorption of this institution by the Birmingham and Midland Eye and Throat Hospital, Hunt became a member of its staff.

JESSOP, WALTER HAMILTON (1828-1862).—M.R.C.S. Eng., 1852 (Charing Cross).
Surgeon and founder of Cheltenham and Gloucestershire Ophthalmic Hospital.

JONES, WILLIAM GOODALL (-1884).—M.D., 1859 (St. Andrew's); M.R.C.S. Eng., 1857; L.S.A., 1858.
One of the Medical Officers of St. Anne's, Liverpool. It is not known whether he had any ophthalmic interests.

JORDAN, FURNEAUX (1830-1911).—M.R.C.S. Eng., 1854; L.S.A., 1855.
One of the outstanding general surgeons of the 19th century. He appears as Consulting Surgeon to the Birmingham Eye and Ear Infirmary in the earlier reports, as a surgeon in the later reports, 1861-1870. His numerous papers include one on "Cataract in Relation to Heart Disease."

KEDDELL, WILLIAM F. (1827-1875).—M.R.C.S. Eng., 1856 (Middlesex).
Surgeon to Gloucestershire Eye Institution, 1869 (? 68)-1875. Surgeon to Gloucestershire General Infirmary, 1869-72.

KEMP, GEORGE (1817-1892).
Surgeon to Sheffield Eye Dispensary, c. 1863-74. Was at a time lecturer at Sheffield Medical School on Materia Medica.

KEYWORTH, JOHN WHITE (1826-1903).—M.D. Lond., 1856; M.B., 1851; M.R.C.S. Eng. and L.S.A., 1850 (St. Thomas').
Had a distinguished career as a student and developed a large practice in Birmingham where he was Surgeon to the Eye and Ear Dispensary. Went to New Zealand in 1883 and settled in Australia in 1897, where he died in 1903.

KING, LEWIS JOSEPH (1849-1898).—M.R.C.S. Eng., 1871 (Bristol Royal Infirmary).
One of the Surgeons of the Bath Eye and Ear Dispensary. It is not known whether he had any ophthalmic interests.

KNOX, CHARLES (-).—L.K.Q.C.P. Irel. and L.M., 1877; M.R.C.S. Eng., 1878; L.S.A., 1877 (Royal Infirmary, Liverpool).
Surgeon to Birkenhead Eye and Ear Infirmary, c. 1883-85. It is not known whether he had any ophthalmic interests.

LAITY, RICHARD J. (-1888).—M.R.C.S. Eng., 1837; L.S.A., 1838 (St. Barthol.).
One of the Physicians to the Devonport and Stonehouse Public Dispensary and Institution for Diseases of the Eye and Ear. It is not known whether he had any ophthalmic interests.

LAND, THOMAS (-).—M.R.C.S. Engl., 1837; L.S.A., 1838.
Surgeon to Leeds Eye and Ear Infirmary, c. 1852-c. 1868.

LANE, EDWARD STANLEY (-).—M.D. (Harvard Univ., U.S.), 1868; L.F.P.S. Glasg. and L.M., 1870 (Boston, U.S.A. and Glasgow).
Surgeon to Clun Eye and Ear Dispensary, 1874. Is described as the author of the thesis on "Opium, its Use and Abuse."

LAWRENCE, ALFRED EDWARD AUSTIN (1848-1901).—M.B. Aberd. and C.M., 1872 (Bristol and Univ. Aberd.).
Physician to Redland Dispensary for Women and Children. Also Professor of Midwifery and Diseases of Women and Children at Univ. Coll., Bristol. He does not appear to have had any ophthalmic interests.

LEE, JAMES MARTINEAU (-).
Surgeon to Norfolk and Norwich Eye Infirmary, 1827-

MACMILLAN, ANGUS (1833-89).—M.D. Edinb., 1852; M.R.C.S. Eng. and L.S.A., 1852.
Surgeon to Hull Eye and Ear Dispensary and various minor charities. Apart from two minor ophthalmic publications he contributed on the "Health and Meteorology of Hull for 1868."

MAGRATH, SIR GEORGE (? -1857).—F.R.C.S. Edinb.; F.R.C.P. Lond.; F.R.S.
Had a distinguished naval career. Was Flag Medical Officer to Nelson. Figures as Physician extraordinary to the Devonport and Stonehouse Public Dispensary and Institution for Diseases of the Eye and Ear. It is not known whether he had any ophthalmic interests.

MARSHALL, GEO. HENRY (1814-1884).—M.D. Glasgow, 1838; F.R.C.S. Eng., 1852; M.R.C.S., 1836; L.S.A., 1836. (Univ. Coll., London.)
Surgeon to Birmingham Eye and Ear Infirmary, c. 1863-1870.

MARTINEAU, THOS. JAS. (-c. 1824).
One of the three original surgeons and founder of Norfolk and Norwich Eye Infirmary, 1822-23.

MAY, JOSEPH (1808-1904).—F.R.C.S. Eng., 1860; M.R.C.S. Eng. and L.S.A., 1830 (St. Bart's. and Aldersgate St.).
Surgeon to Devonport and Stonehouse Public Dispensary and Institution for Diseases of the Eye and Ear. It is not known whether he had any ophthalmic interests.

METFORD, JOSEPH SEYMOUR (1825-1895).—M.R.C.S. Eng. and L.S.A., 1846.
One of the Surgeons to Redland Dispensary. Appears to have been interested in otology.

MILWARD, JAMES (-1895).—M.R.C.S. Eng., 1865; L.S.A., 1866 (Guy's), M.D. Brussels, 1882.
Surgeon to Cardiff Eye and Ear Hospital, c. 1887-c. 1895.

MURIEL, CECIL JEFFERY (-).—L.R.C.P. Lond., 1882; M.R.C.S. Eng., 1882 (St. Bart's.).
Surgeon to Norfolk and Norwich Eye Infirmary, 1891-1925.

MYDDLETON-GAVEY, EDWARD HERBERT (-).—M.R.C.S. Eng., 1883; L.S.A., 1882 (St. Bart's.).
Surgeon to Tunbridge Wells Eye and Ear Hospital, 1896-1904.

NELSON, C.
Surgeon to Leeds Eye and Ear Infirmary, c. 1836-1846.

NORGATE, BENJAMIN HENRY (1803-1858).—F.R.C.S. Eng. (one of the original 300 Fellows); L.S.A., 1823.
Surgeon to Norfolk and Norwich Eye Infirmary, 1827-c. 1857. Surgeon to Norfolk and Norwich Hospital, 1830-1857. Cons. Surg. 1857-8.

NORTH, T. H.
Surgeon to Norfolk and Norwich Eye and Ear Infirmary, 1882-91.

NOTTINGHAM, JOHN (1810-1895).—F.R.C.P., 1844; F.R.C.S., 1846.
Founder of St. Anne's Dispensary and Eye and Ear Institution, Liverpool. Wrote extensively on ophthalmic subjects. Was also interested in otology. Was appointed General Surgeon to the Southern Hospital, 1856. Had wide cultural interests.

NUNNELEY, JOHN ALBERT (-1913).—M.B. Lond., 1864; M.R.C.S. Eng., 1853 (Leeds, Guy's and Paris).
Surgeon to Leeds Eye and Ear Infirmary, 1864-69. Ophthalmic and Aural Surgeon to Leeds General Infirmary.

NUNNELEY, THOMAS (1809-1870).—L.S.A., 1832, F.R.C.S., 1843.
Surgeon to Leeds Eye and Ear Infirmary, 1835-64. Surgeon to Leeds General Infirmary, 1864-70. Contributed extensively to ophthalmic literature. Was at one time lecturer on anatomy, physiology and pathology in Leeds Medical School.

OAKLEY, GEO. GARDINER (-).—M.R.C.S., L.R.C.P. Lond., 1896 (St. Bart's.).
Surgeon to Halifax Eye, Ear and Throat Hospital, 1896-1915.

OAKLEY, JOHN (-).—M.R.C.S. Eng. and L.S.A., 1865 (King's Coll.), J.P.
Surgeon to Halifax Eye, Ear and Throat Hospital, 1886-1915. Made significant contributions to ophthalmic literature.

O'REILLY, MILES WILLIAM (-).—M.D., L.M., 1879; M.Ch., 1880 (Queen's Coll., Cork).
Assistant Surgeon to Birkenhead Eye and Ear Hospital, 1886-1890.

PADLEY, GEORGE (1819-1897).—M.R.C.S. Eng., 1843; L.S.A., 1844.
One of the Surgeons of St. Anne's, Liverpool. At one time demonstrator of anatomy at Liverpool Infirmary School of Medicine. It is not known whether he had any ophthalmic interests.

PARKER, JAS. CHARLES (-).—M.R.C.S., 1822; L.S.A., 1822.
Surgeon to Bridgwater Eye Dispensary, c. 1835. Surgeon to Bridgwater Infirmary.

PARSONS, J. (1814-1893).—M.R.C.S. Eng., 1836; L.S.A., 1837.
Surgeon to Bridgwater Eye Infirmary, c. 1847-50. Surgeon to Bridgwater Infirmary.

PINKERTON, JAMES (-).—M.D., M.Ch. and L.M., 1881 (Queen's Coll., Belfast).
Surgeon to Birkenhead Eye and Ear Hospital, c. 1891-92.

POWELL, HENRY (-).—M.D. Oxford, 1839; F.R.C.P., 1840.
One of the physicians to Southam Eye and Ear Infirmary, 1855-c. 1865. Physician to Coventry and Warwickshire Hospital. It is not known whether he had any ophthalmic interests.

REED, WILLIAM (1811-1893).—M.R.C.S. Eng., 1838; L.S.A., 1837.
Surgeon to York Eye Institution, 1854-67.

ROBERTSON, ARCHIBALD (1790-1864).—M.D. Edinb., 1817; F.R.S.
One of the Physicians to Southam Eye and Ear Infirmary, 1855-c. 1860. Physician extraordinary, Northampton General Infirmary, 1859-64. It is not known whether he had any ophthalmic interests.

ROBERTSON, J. O.
One of the surgeons to Birkenhead Eye and Ear Dispensary, 1890-c. 1892.

ROBINSON, HAYNES SPARROW (-).—M.R.C.S. Eng., 1861; L.S.A. 1862 (St. Bart's.).
Surgeon to Norfolk and Norwich Eye Infirmary, c. 1873-1907. Surgeon to Norfolk and Norwich Hospital.

ROLSTON, GEORGE (-1864).—M.R.C.S. Eng. and L.S.A., 1820.
Surgeon to Devonport and Stonehouse Public Dispensary and Institution for Diseases of the Eye and Ear. It is not known whether he had any ophthalmic interests.

ROW, FREDERICK (1811-1886).—M.D. Edinb., 1835; L.R.C.P. Edinb., 1834; L.S.A., 1834.
Surgeon to Devonport and Stonehouse Public Dispensary and Institution for Diseases of the Eye and Ear. It is not known whether he had any ophthalmic interests.

RUSBY, T. S. (-).
Surgeon, Leeds Eye and Ear Infirmary, c. 1835.

RUSSELL, HENRY (1801-1854).—M.R.C.S., 1825; F.R.C.S., 1843 (one of the original 300 Fellows).
Born at York.
Founder and first Surgeon of York Eye Institution to which he served from 1831-1854, the year of his death. Surgeon to County Hospital, York, 1834-54. Lecturer on Surgery at York Medical School, 1842-.

RUTLEDGE, THOMAS E. (-1878).—M.R.C.S. Eng. and L.M., 1857; L.S.A., 1857 (London Hosp.).

SEATON, JAMES (-1880).—L.R.C.S. Edinb., 1854; L.S.A. 1854 (Glasg.).
Surgeon, Leeds Eye and Ear Infirmary, c. 1868-69. Surgeon, Leeds General Infirmary. At one time lecturer on anatomy at Leeds School of Medicine.

SHAW, CHARLES THOMAS KNOX (-).—L.R.C.P. Lond., 1878; M.R.C.S. Eng., 1877 (Guy's).
Surgeon, Buchanan Ophthalmic and Cottage Hospital, 1884-1886. Published articles on ophthalmic subjects.

SMITH, A. (-).
Surgeon to Cheltenham and Gloucestershire Ophthalmic Infirmary, c. 1869-72, also Surgeon to Cheltenham Eye, Ear and Throat Infirmary in 1889 and subsequently.

SMITH, HENRY LILLEY (-1859).—M.R.C.S. Eng., 1810.
Founder and Surgeon, Southam Eye and Ear Infirmary, 1818-59. Founder and Chairman of London Society for the establishment and extending self-supporting of Provident Dispensaries. Projector of the Shoe Black Society of London, 1851. Wrote on theological subjects. For a full account see R. J. Cyriax, *Brit. Med. Jl.*, 1936, ii, 141.

SMITH, SAM. WAGSTAFF (1836-1900).—M.D. St. Andrew's, 1862; M.R.C.S., 1856; L.M., 1857; L.S.A., 1858 (King's Coll.).
Assistant Surgeon, Eye, Ear and Throat Infirmary, Cheltenham, c. 1889. Published papers on general medical interest.

SMITH, WILLIAM (1821-1876).—M.R.C.S. Eng., 1843; L.S.A., 1842 (Bristol and Westminster).
Surgeon, Redland Dispensary. Surgeon, Chesterfield and North Derbyshire Hospital and Dispensary.

SNELL, HUGH H. (1819-1892).
Surgeon to Sheffield Eye Dispensary, c. 1875.

SNELL, SIMEON (1851-1909).—D.Sc.; M.R.C.S. Edinb., 1892; L.R.C.P. Lond., 1873; M.R.C.S. Engl., 1872 (Leeds and Guy's).
One of the most eminent ophthalmologists of the 19th century. Ophthalmic Surgeon, Sheffield Royal Infirmary. Pioneer in Industrial and Preventive Ophthalmology.

TAYLOR, JOHN OLIVER (-).—M.R.C.S. Eng.; L.S.A., 1841.
One of the surgeons to St. Anne's Dispensary, Liverpool. It is not known whether he had any ophthalmic interests.

TAYLOR, JOHN STOPFORD (1822-1901).—M.D. (Univ. and King's Coll., Aberd., 1853); C.M., 1876; L.R.C.P. Edinb, 1859; L.S.A. (St. Bart's.); F.R.C.S., 1844.
One of the physicians to St Anne's Dispensary, Liverpool. Medical Officer of Health, Liverpool. Does not appear to have had any ophthalmic interests.

TAYLOR, ROBERT HIBBERT (1813-1898).—M.D. Edinb., 1834; L.R.C.S. Edinb., 1834.
Surgeon to Dispensary for Diseases of the Eye, Liverpool, 1834-53; and subsequently at the Liverpool Eye and Ear Infirmary. Lecturer on ophthalmic medicine and surgery, Liverpool School of Medicine.

THOMAS, JABEZ (-).—L.R.C.P. Edinb., 1865; F.R.C.S., Edinb., 1878; M.R.C.S. Eng.; L.S.A., 1865 (Guy's).
Surgeon to Swansea Eye Hospital, 1878-88. Ophthalmic Surgeon, Swansea General Hospital, 1888-1900. Author of papers on ophthalmic and general interest.

THOMSON, THOMAS (1803-1873).—M.D. Edinb., 1827.
One of the Physicians to Southam Eye and Ear Infirmary. It is not known whether he had any ophthalmic interests.

TOOGOOD, JOHN GILES (-).—M.R.C.S., 1832; L.S.A., 1831.
Surgeon to Bridgwater Eye Dispensary, 1847 (or earlier) -1850. Surgeon, Bridgwater Infirmary.

TOOGOOD, JONATHAN (1784-1870).—Ext. Lic. Roy. Coll. of Phys., 1844; F.R.C.S., 1843 (one of the original 300 Fellows).
Founder of Bridgwater Infirmary, 1813, and of Bridgwater Eye Dispensary, 1834. Wrote extensively on general medical subjects.

TRIPE, CORNELIUS W. (-).—M.D. Edinb.
One of the Physicians to Devonport and Stonehouse Public Dispensary and Institution for Diseases of the Eye and Ear.

WALLACE, QUINTIN M. (1862-1892).—M.A. Edinb., 1881; M.D. 1891; M.B. and C.M., 1887 (Edinb.).
Surgeon, Birkenhead Eye and Ear Hospital, 1891-92. Medical Superintendent, Birkenhead Fever Hospital.

WEBSTER, THOMAS (1818-1910).—L.R.C.P. Lond., 1886; M.R.C.S. Eng., 1858 (Bristol).
One of the surgeons to Redland Dispensary. Medical Officer to Bristol Hospital for Diseases of Women and Children. Had a local reputation as ophthalmic and aural surgeon.

WELCHMAN, EDW. (1814-1865).
One of the Surgeons to Southam Eye and Ear Infirmary, c. 1864.

WELSH, JOSEPH (-1889).—L.F.P.S. Glasg. (1863); F., 1873; L.S.A. Lond, 1869 (Manchester).
Surgeon to Clun Eye and Ear Dispensary, c. 1869-74. Presumably also its founder. Medical Officer to Clun District Union, and Surgeon to Trinity Hospital. Served with the U.S.A. Army and Navy during Civil War. Died in Virginia, U.S.A.

WHITTLE, ALFRED (1823-1877).—M.R.C.S. Eng., 1853; L.S.A., 1850; L.R.C.P. Edinb., 1859; M.D. Edinb., 1866.
One of the surgeons to St. Anne's Dispensary, Liverpool. It is not known whether he had any ophthalmic interests.

WIGGLESWORTH, ARTHUR (-).—M.R.C.S. Eng., 1860; L.S.A., 1863 (University Coll., London and Liverpool).
One of the surgeons to St. Anne's Dispensary, Liverpool. It is not known whether he had any ophthalmic interests.

WILDERS, JOHN ST. S. (1837-1904).—M.R.C.S. Eng., 1858; L.S.A., 1859 (Queen's Coll., Birmingham).
Surgeon to Birmingham Eye and Ear Infirmary in the last year of its existence. Surgeon to Queen's Hospital, Birmingham, and Professor in Materia Medica, Queen's College, Birmingham.

WILSON, A. (-).
Assistant Surgeon to Hull Eye and Ear Dispensary, ? 1867-1875.

WISE, ROBERT STANTON (-1905).—M.D. St. Andrew's, 1842; L.M. Dubl., 1841. One of the physicians to Southam Eye and Ear Infirmary, 1855-c. 1860. It is not known whether he had any ophthalmic interests.

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Bath Ear, Nose and Throat Hospital. Birkenhead General Hospital. Birmingham and Midland Eye Hospital. Bridgwater and District General Hospital. Bristol Dispensary. Cardiff Royal Infirmary. Cheltenham General and Eye Hospitals. Dover, Royal Victoria Hospital. Dudley, Guest Hospital. Gloucestershire Royal Infirmary and Eye Institution. Halifax Royal Infirmary. Hull Royal Infirmary. Kent and Sussex Hospital, Tunbridge Wells. Leeds General Infirmary. Liverpool Dispensaries. Liverpool Royal Infirmary. Norfolk and Norwich Hospital, Norwich. Plymouth, Prince of Wales Hospital. St. Leonards, Buchanan Hospital. Scarborough Hospital. Sheffield Royal Infirmary. Stoke-on-Trent, North Staffordshire Royal Infirmary. Swansea General and Eye Hospital. Taunton and Somerset Hospital. Torbay Hospital, Torquay. York County Hospital.

The Charity Commissioners have kindly given information on the Taunton Eye Infirmary, whilst further data on local conditions, the collection of which must have entailed considerable effort, have been kindly supplied by:—

Dr. G. J. Adams, Gloucester. George Black, Esq., F.R.C.S., Leeds (who kindly supplied manuscript notes by Mr. H. Secker Walker on the history of ophthalmology in Leeds). John A. Bower, Esq., Cheltenham. R. J. Carless, Esq., Hull. Prof. A. M. Connell, F.R.C.S., Sheffield. E. R. Cross, Esq., Scarborough. Dr. R. J Cyriax, Leamington Spa. Mrs. Catherine Dale, Scarborough. Dr. David Davies, Tunbridge Wells. W. Deacon, Esq., Bridgwater. Dr. Charles Farrant, Winchester. Dr. W. R. Floyd, Birkenhead. Dr. J. L. Gregory, Shrewsbury. Frank Inch, Esq., Norfolk. F. Lavender, Esq., Bishop's Castle. Dr. D. Matheson Mackay, Hull. Dr. P. Macdonald, York. Dr. G. Gardner Oakley, Halifax. Lund Pollard, Esq., Halifax. Dr. F. G. Thomas, Swansea. Dr. A. G. Ward. Leamington Spa. Dr. W. B. Winckworth, Taunton.

BILATERAL SYMMETRICAL CYSTIC DETACHMENT OF THE RETINA

BY

H. B. STALLARD

LONDON

Two cases of bilateral symmetrical cystic detachment of the retina pre-equatorial in the upper temporal quadrants of each eye are reported because such a condition is, I think, a rarity. In both cases the cysts were symmetrical in size, shape and position. In one case the cystic detachment in the right eye had spontaneously disappeared, the retina was replaced and there was no retinal hole. The periphery of the cyst in this case was marked posteriorly by a broad greyish-white crescent and the area of retina which had formed the thin stretched cystic wall and was now replaced showed a slightly deeper red fundus reflex than the remainder of the fundus. These fundus appearances were precisely those seen after successful reposition of the cystic detachment by surgical measures. In both cases there was no family history of cystic detachment nor any congenital ocular or other defect. The eyes of both patients were quite normal except for the cystic detachment. One had a low degree of myopia and the other was emmetropic. Neither was aware of the cystic detachments which were discovered in routine examinations. The vitreous appeared normal on ophthalmoscopic examination in each case, there were no congenital defects and no signs of any congenital anomaly elsewhere in their bodies. Operative treatment consisted of a single application of surface diathermy near the most dependent part of the cyst about half-way between the ora serrata and the equator. Through this site a single puncture was made with a fine penetrating diathermy needle 1·5 mm. long. The cystic fluid was effectively evacuated and post-operative recovery was uneventful. The retina was replaced in the three eyes operated upon.

Case notes

(1) Spr. S. G. L., Royal Engineer, aged 22 years, came to 108 (Br) General Hospital on November 20, 1944 on account of conjunctivitis. Routine fundus examination showed cystic detachment of the retina in the upper temporal quadrant of each eye. This was between the ora serrata and the equator (see Fig. 1). R.V. 6/5. L.V. 6/9, both eyes emmetropic.

On December 1, 1944, the left eye was operated on and on December 29, 1944, the right eye was done. The retinae were replaced and remained so. On January 17, 1945, R.V. 6/5, L.V. 6/5. Visual fields full. Schiötz tonometer readings R.E. 13 mm. Hg. L.E. 12 mm.Hg. January 20, 1945, discharged to Convalescent Depot. Follow-up, retinae remained in place.

(2) Pte. S. B., aged 34 years, was referred on January 26, 1945, to Major Hill, 23 (Scot) General Hospital, for routine examination and I am grateful to him for referring his case to me at 108 (Br) General Hospital.

Fig. 2 shows the site of cystic retinal detachment in the right eye, which I believe at some time underwent spontaneous reposition of the retina. The greyish white crescentic band with its concavity anteriorly marks the posterior limit of the base of the cyst. In front of this is an area of thin retina, the subsided retinal cyst wall, through which the red fundus reflex shows more intensely than the rest of the fundus. There was no hole or split to be seen and the visual field was full. Schiötz tonometer reading was 12 mm.Hg.

As mentioned above the fundus appearances in the pre-equatorial region of the upper temporal quadrant of the right eye are similar to those after replacement of the retina by surgical diathermy and drainage of the cystic fluid, except of course there is here in addition the choroido-retinal scar made by the diathermy. R.V. 6/60 with − 4·0 sph. − 0·5 cyl. ax. 90. 6/6.

The left eye showed a cystic detachment of the retina in the upper temporal quadrant between the equator and ora serrata (see Fig. 2). L.V. 6/36 with − 2·0 sph. 6/6. The Schiötz reading was 10·5 mm.Hg. On February 5, 1945, an operation was performed. The exposed sclera just above the upper margin of the external rectus muscle, half-way between the ora serrata and equator was touched with a single application of surface diathermy and this site was penetrated with a diathermy needle. Some syrupy cystic fluid came out.

The post-operative course was uneventful, the retina was replaced and on February 24, 1945, the visual field was full and the Schiötz reading 9 mm.Hg.

Why operate in such cases? My reason for so doing was based on the observation of 13 cases of cystic detachment of the retina seen in the M.E.F. 12 of these developed tears, 7 of these had multiple tears. In 2 cases there was a sudden spread of the detachment from beyond the limits of the cystic area which caused separation of the macula. One soldier in whom this occurred sought advice within a week of this catastrophe and the other four months later.

As it is impossible with troop movements in a field force to keep in touch with such cases and to have them up for periodic follow-up examinations I think it is safer to operate, for the results are and should be 100 per cent. successful.

Indeed this was so in the 13 cases operated on in the M.E.F. and 3 in the B.L.A. (one of these had both eyes operated on—Spr. S. G. L., described in this paper).

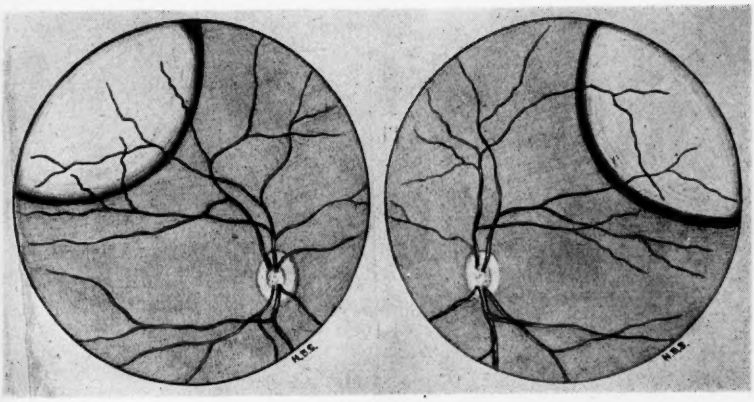

FIG. 1.

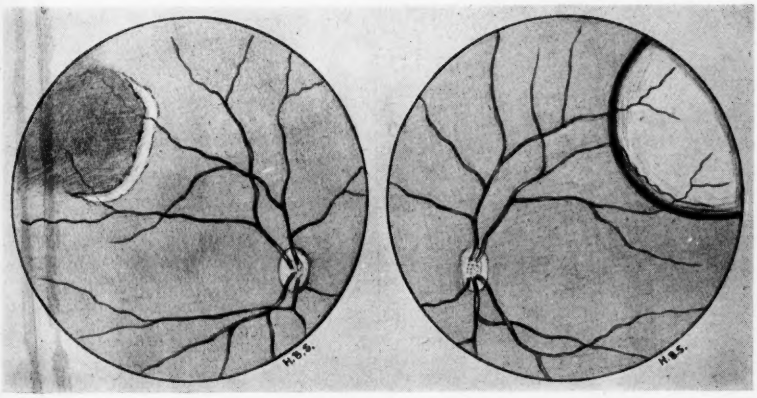

FIG. 2.

UNIV. OF MICH.

PTERYGIUM. ITS NATURE AND A NEW LINE OF TREATMENT*

BY

DR. SABRI KAMEL

CAIRO

MANY theories are put forward and discussed in the literature regarding the nature of pterygium, and many papers were written on the subject, few of which tried in a precise way to describe exactly how the pterygium is formed. The aim of this paper is to report the results of a six years' investigation of the subject in a locality full of cases of pterygia. It discusses a new theory of its development, and a new line of treatment, based upon this theory, which was practised on more than 600 cases with complete success.

A true pterygium is a pathological encroachment of part of the bulbar conjunctiva exposed in the palpebral fissure over the cornea. This encroachment is in the form of a fold of the conjunctiva, triangular in shape, with the apex, called the head, on the cornea, the base merging imperceptibly in the caruncle region, or the region of the outer canthus, and the sides formed of two folds of the conjunctiva, an upper and a lower. This shape is not pathognomonic because if you pull the conjunctiva towards the cornea from any point near the limbus, it forms a triangular fold quite identical with a pterygium. The clinical appearance of the pterygium differs according to the stage in which it is seen and according to the degree of activity of the process that leads to its formation. Thus in its active and progressive stage, the fold is hyperaemic with dilated and congested radially disposed blood vessels, usually two or three in number, and the fold looks thickened, opaque and less translucent than the surrounding conjunctiva. In the meantime, surrounding the advancing head over the cornea, a halo of greyish white opacity is seen, with its convexity towards the centre of the cornea. This halo of opacity is denser near the head of the pterygium and fades away towards the centre of the cornea. It is quite superficial being present in the epithelium and Bowman's membrane, and is composed of greyish white dots mostly aggregated at the points where the ciliary nerves pierce Bowman's membrane. This appearance of the clinical aspect of progressive active pterygia differs according to the amount of the activity of the case. But it is always noticed that the more the hyperaemia and congestion of the conjunctival vessels, the denser is the halo of opacity in the cornea and the

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more progressive is the pterygium. Sooner or later, the condition begins to subside, the process being more or less self-limiting, and the regressive stage is reached in which the halo of opacity in the cornea preceding the advancing head of the pterygium stops short and begins to become absorbed and the hyperaemia and engorgement of the conjunctival vessels begins to abate. Finally the atrophic stage is reached in which no halo of opacity is seen in the cornea, the head of the pterygium thins out and becomes cicatrised, the engorgement of the conjunctival vessels disappears nearly completely and the fold of the conjunctiva in general becomes more translucent than before but still less than the surrounding normal conjunctiva.

This is the clinical description of the different stages of the development of the pterygium upon which all observers are agreed. But how and why this fold of conjunctiva encroaches upon the cornea is still an unsettled problem. It is not a problem of academic interest. On the contrary, it has great practical importance, for unless we know exactly and precisely how and why this fold encroaches upon the cornea to form the pterygium, all our treatment of the condition will be symptomatic and thus valueless. And this, I believe, is what we are doing now. Here, in Egypt, for example, the operation in vogue for the treatment of pterygium is the McReynold's tucking operation. Every pterygium we meet, we tuck. Yet in some 30-50 per cent. of cases, we get a recurrence a few months later. In fact it is these recurrences, or failures, that drew my attention to the condition and made me start this investigation.

In a locality in which pterygium is a condition that one sees every day, all types and all stages of pterygia could be observed, compared and followed. It goes also without saying that in such a locality, with a good deal of material, so to speak, the earliest clinical signs that appear in the cases that will develop a pterygium later on could be detected.

Thus I observed in many cases that come to the hospital, a simple chronic congestion of the conjunctival blood vessels in the area exposed in the palpebral fissure, mostly nasally, but sometimes also temporally, which causes practically no discomfort, the patient coming to the hospital for something else. On observing these cases carefully, one finds an area of congestion, more intensified near the caruncle, strictly restricted to the exposed part of the bulbar conjunctiva, with few vessels running radially towards the cornea and stopping short at a varied distance from the limbus. The conjunctiva itself in such cases is slightly thickened and less translucent than the surrounding areas. When the case is severe, the vessels reach the limbus. No treatment

was found of any avail for such conditions, and the more the patients paint their lids for their trachoma, the more the congestion of the bulbar conjunctiva in the exposed area persists. This type of congestion, thickening and loss of translucency in a restricted area of the bulbar conjunctiva exposed in the palpebral fissure is quite unknown to have any relation to trachoma, which is the most common chronic conjunctival lesion in Egypt. So I thought of examining some of these areas histo-pathologically. I selected some cases, and excised the congested area of the bulbar conjunctiva and sent it for examination.* The bare area left behind was covered by undermining the conjunctiva up and down and applying a few stitches. The result of the histo-pathological examination was identical in all cases. The epithelium is thinned, the nuclei of the submucosa have for the greater part disappeared, with hyaline and elastic tissue-like degeneration affecting the new formed connective tissue bundles in the submucosa. This pathological picture is in many aspects identical with that of pterygium. From the clinical point of view, also, if one disregards the corneal encroachment, the clinical picture of this condition is identical with what one sees in the fold of conjunctiva that forms the pterygium. Thus the two conditions are identical pathologically, while clinically the only difference is that in one of them the affected fold of conjunctiva encroached on the cornea, and in the other it did not. This close resemblance between the two conditions could not, in my opinion, be a simple coincidence. So I followed many of these cases, which I called chronic irritative exposure conjunctivitis, for a long period at regular intervals. Some of the cases remained stationary, others subsided markedly, while the majority developed a pterygium in a period varying from three months to a year. In the latter cases, the earliest changes that are seen in the cornea are a haze at the limbus formed of minute dots, followed in time by a limbic vascularisation. The more the haze progresses towards the centre of the cornea, the more the vascularisation is attracted following it. At a certain stage of the progress, the conjunctiva begins to encroach. The whole condition is very slow taking months to develop. Thus I came to the conclusion that this condition that I call chronic irritative exposure conjunctivitis, must be the potential precursor of the pterygium. It does not form a pterygium on the other hand, except when certain changes do occur in the cornea. These corneal changes I presumed to be caused by the same aetiological factor that causes the conjunctival lesion.

* All the pathological specimens used in this investigation were kindly prepared and examined in the Giza Memorial Ophthalmic Laboratory. The specimens after being taken, were directly pinned with wooden pins to pieces of cork with marks showing the positions of the head and the base. They were pinned so that they would not get contracted in the preservative.

Continuing the investigation further, I tried to find a cause for the encroachment itself of the conjunctiva over the cornea. Many corneal lesions, both inflammatory and degenerative, invite a limbic vascularisation, but no lesion of the cornea ever invites the encroachment of a whole fold of conjunctiva except the condition we call pterygium. The pterygium is the only lesion of the cornea in which a whole fold of conjunctiva encroaches on its surface. So continuing to take specimens and subjecting them to histo-pathological examination, I began to choose cases of well developed pterygia along with cases of very early, so to speak, budding pterygia and to compare the histo-pathological picture of both in the hope of finding a difference that may account for the encroachment of the whole fold of conjunctiva over the cornea. The result of such a comparison proved to be gratifying, for an important difference was found that can account for and explain the cause of the encroachment of conjunctiva over the cornea to form the pterygium. Thus, and to give an example of the difference I constantly found, at one and the same time I submitted four specimens to pathological examination. Two of these were of well developed pterygia while the other two were of very early pterygia. The pathological report on the well developed cases ran as follows: "The nuclei of the submucosa for the greater part have disappeared and the connective tissue bundles have become confluent with each other and look homogeneously pink (hyaline degeneration). In the deeper parts of this hyaline tissue, elastic tissue-like degeneration is seen in the form of dark staining convoluted fibres. The epithelium over the affected area is thinned." The report on the other two cases of very early pterygia, on the other hand was "the appearances of the specimens are exactly the same as those seen in your other two specimens, but the elastic-like degenerated fibres are seen in cross section." This difference between the two pictures is in my opinion very important. For if you have horizontally disposed fibres and you cut a section through them at right angles to their axes, and you look at the section, you will see the fibres in cross section. While if the same horizontally disposed fibres shrink and contract, and you cut the same section through them, you will see the fibres in section, confluent and convoluted.

Now pterygium in my opinion, and as I will discuss later, is an inflammatory condition. Every inflammatory process heals either by complete resolution, or if the process has lasted any length of time it will lead to the damage and disappearance of the specialised elements, if any, and to a reactive overgrowth of the more resistant connective tissue cells. A replacement fibrous tissue is the response of the tissues to the effects of chronic inflammations.

The conjunctiva and cornea are no exception to this rule. The process that leads to the formation of the pterygium is, as I said before, an inflammatory process. As a result of the deep inflammation, fibrous tissue in the form of horizontal bands is laid down. As long as the inflammatory process is restricted to the conjunctiva, no harm is done and no pterygium is formed, though the pathological changes that occur are just the same as those that one sees in the fold of conjunctiva of a well formed pterygium. But once the inflammation attacks the cornea, and the chronic conjunctivitis becomes a chronic kerato-conjunctivitis, the pterygium starts to form and the encroachment starts to occur. As a result of this kerato-conjunctivitis, fibrous tissue bands are laid down in the submucosa of both the conjunctiva and cornea. These connective tissue bands and fibres undergo the same changes that occur in fibrous tissue elsewhere. Thus in time they shrink and contract. This shrinkage will exert a certain amount of pull, and as the fibrous bands are coherent simultaneously with both the conjunctiva and cornea, this amount of pull will either pull the cornea towards the conjunctiva, or the conjunctiva towards the cornea. And as the cornea is fixed and the conjunctiva more or less mobile, this pulling effect caused by the shrinkage of the fibrous tissue bands will pull the conjunctiva, as a whole and in a triangular fold, towards the cornea in the form of what we call the pterygium. The more the case is progressive and active, the more fibrous tissue will be laid down, and the more, through its contraction, the pterygium will progress towards the centre of the cornea.

Thus in my opinion, the pterygium is the symptom of an underlying inflammatory process that starts in the bulbar conjunctiva exposed in the palpebral fissure, as a chronic irritative exposure conjunctivitis. The condition thus starting may have one of two courses to follow :—

(1) It may restrict itself to the conjunctiva alone and not affect the cornea at all, in which case you see clinically in the bulbar conjunctiva exposed in the palpebral fissure, usually in and sometimes out, a hyperaemic horizontal area extending from the caruncle towards the limbus with engorged radially disposed blood vessels which is less translucent than the surrounding area. It merges nearly imperceptibly in the healthy conjunctiva above and below. The condition has an active stage, a regressive stage and an atrophic stage just as is usually described in the clinical stages of the pterygium. Pathologically it shows the same changes seen in the fold of conjunctiva that forms the pterygium. The same thinning of the epithelium with loss of the nuclei of the submucosa, the replacement connective tissue deposition in radial

bands and the early development of hyaline and elastic tissue-like degeneration, all of which changes seen in cases of pterygia are identically seen here. And when the condition subsides the engorgement of the vessels disappears, the translucency increases and at most a thickened part near the limbus, very much resembling a pinguecula, but more elongated and hyaline looking, is left behind.

(2) If, on the other hand, the chronic inflammation that started in the conjunctiva extends to the cornea, a pterygium is formed. The extension of the inflammatory process is by continuity and contiguity with the same aetiological factor acting on both tissues. It should be remembered that the conjunctiva and the superficial layers of the cornea are of the same embryonic origin, and it is rare for many of the inflammatory processes of the conjunctiva to heal without an affection of the superficial strata of the cornea—a fact that led Duke-Elder to view the superficial corneal affections usually accompanying acute conjunctivitis as a conjunctivitis of the cornea. And it is only when the pathological condition that starts as a conjunctivitis becomes a kerato-conjunctivitis that a pterygium is formed. As a result of this kerato-conjunctivitis, fibrous tissue is laid down in the submucosa of both the conjunctiva and the cornea, the contraction and shrinkage of which will lead to the encroachment of a fold of conjunctiva over the cornea forming the pterygium. So a pterygium is neither a disease of the conjunctiva nor a disease of the cornea—in fact it is not a disease at all—as it is only the symptom of an underlying pathological condition that does not give the pterygium as its symptom except when it affects simultaneously the conjunctiva and the cornea.

Thus, and to sum up, a pterygium, in my opinion, is a mechanical encroachment of part of the conjunctiva over the cornea caused by the shrinkage and contraction of radially disposed fibrous tissue bundles laid down in the submucosa of the conjunctiva and in the superficial layers of the cornea, as a result of a chronic irritative exposure kerato-conjunctivitis.

An aetio-pathological discussion

Three items are worth discussion in regard to the aetiopathology of pterygium. The first is the neoplastic theory of its origin, the second is the degenerative theory of its origin, and the third is a comparison between the pterygium and pannus degenerativus.

The pterygium is supposed by many authors to be neoplastic in origin. Thus Williamson-Noble[1], for example, mentions it under the heading of tumours of the eye, in Berens' book, " The

Eye and its Diseases," though he states that its pathological nature is not clear. And John McReynolds[2] in describing the surgery of the tumours of the eyeball mentions the pterygium as "one of the simple, benign primary growths on the outside of the eyeball." And Schreiter[3] in 1872 considered it as a polypoid growth of the conjunctiva.

This theory of the pterygium being of neoplastic origin is not proved pathologically, and I wonder how we can agree with it, with no histo-pathological foundation. There is nothing, in fact, in the histology of the pterygium itself that suggests its being a neoplasm. And considering it to be a tumour, one would ask pterygium does not continue its activity when it is tucked down. I have never seen a pterygium when tucked down, grow down, oneself, and quite reasonably, why the "growing head" of the or in any other direction in fact. It is true that we tuck the pterygium on the fallacious presumption that if it wants to grow it might grow and extend harmlessly under the conjunctiva. But I have followed many of the cases for three and more years and not the slightest extension of the tucked head has been seen. It would only be reasonable, if the pterygium were a sort of a tumour, to expect to find some of the cases continuing their activity when tucked. There is nothing to prevent them from doing so. But according to all observations this does not happen. And, at any rate, it would be very queer for a tumour to extend only in one direction, and only over the avascular cornea.

The theory that the pterygium is a degenerative condition, either of the conjunctiva as held by Fuchs[4], Parsons[5] and others, or of the cornea as advocated by Schöninger[6]—is the theory in vogue nowadays, as well as being the theory most strongly advocated. The term degeneration is difficult to define accurately, but it may be said to include the visible alterations in living cells, apart from simple atrophy, which are produced by disordered nutrition and represent damage short of actual death. The disordered nutrition which leads to degeneration may be the outcome of many conditions. It may be toxic, post-inflammatory, due to the action of poisons and irritants, senile, primary . . . etc. And it is a fact that there is no hard and fast line of demarcation between a senile degeneration and, for example, a post-inflammatory one, because the cause of the degeneration bears no relation to the result. A hyaline degeneration caused by toxic nephritis is pathologically the same in consistency as a senile hyaline degeneration. It is only through the exclusion of elements of inflammation, whether chronic or acute, that we can consider the resultant hyaline degeneration to be primary in nature. Thus in the case of the pterygium the question arises whether the

degeneration that we see in the deep layers of the conjunctiva is primary in nature, or is post-inflammatory. In my opinion, based on facts deduced from the clinical and pathological pictures, pterygium is an inflammatory lesion to begin with, while the degenerative changes seen in the deep layers of the conjunctiva are secondary and post-inflammatory in nature. Many facts are in favour of an inflammatory aetiology:

(1) The dense fibrous and connective tissue that appears in the submucosa of the conjunctiva and between Bowman's membrane and the epithelium of the cornea cannot by any means be a result of a degenerative condition. There is no known degenerative condition that leads to the formation of fibrous tissue. It is only inflammatory conditions that lead to damage and disappearance of the specialised elements, if any, and to a reactive overgrowth of the more resistant connective tissue cells. A replacement fibrous tissue is the response of the tissues to the effects of chronic inflammation, not of degeneration.

(2) The round cell infiltration of the superficial strata of the cornea and the marked increase in goblet cells in the conjunctiva which is constantly seen in pterygia, are all signs of chronic inflammation rather than of degeneration.

(3) There is no known degenerative condition that starts in a vascular well-nourished area such as the limbus, and that tends to be self-limiting the more it progresses towards the non-vascular centre of the cornea. I have seen hundreds of pterygia of different types and in different stages of development, very few of which ever reached the centre of the cornea and none at all was ever seen to extend beyond this point.

(4) The vascularity of the pterygium, the periods of more acute inflammatory engorgement that occur, the age of the patients (I saw pterygia in well-built children of 6), the occurrence in a fixed position which is the most exposed part of the bulbar conjunctiva, are all suggestive points in favour of an inflammatory aetiology.

In fact, there is nothing in favour of a degenerative aetiological theory except the finding of early signs of hyaline and elastic tissue-like degeneration in the deeper parts of the pterygium. This degeneration is a definite fact and a constant finding, but, to my way of thinking, based on facts and observations, it is also certain that this early degeneration is secondary and post-inflammatory in nature and not a primary degeneration. In fact, early degenerative changes accompany many of the chronic conjunctival inflammations. And it is not astonishing to any extent that this early degeneration occurs and goes hand in hand with many of the inflammations of a delicate and exposed tissue like the conjunctiva. A fact that led many conjunctival conditions, pinguecula

being a marked example, to be considered as degenerative conditions, without an attempt to define whether the degeneration is primary or post-inflammatory, though it is understood that the primary type is what is meant. A pinguecula, which it should be remembered is considered by many pioneer authors as the precursor of the pterygium, is a patch of hyaline degeneration and elastic tissue proliferation in the connective tissue of the conjunctiva, supposedly due to senility and exposure. As far as senility goes, I cannot consider a pinguecula a simple senile manifestation. It is true that senility, to a certain extent, has nothing to do with age, but I cannot consider a pathological lesion present in 7 per cent. of people between the ages of 10-20 years (according to Hinnen in 1921) a senile condition. I have seen pingueculae in children less than 10 years of age, and I have observed the development of a pinguecula in a young child of 11 years of age, 6 months after the subsiding of recurrent attacks of phlyctenular conjunctivitis. As for exposure, it is a broad term that may include many conditions, all of which lead to a single fundamental factor which is irritation, and an irritative inflammation is a known pathological entity. Thus the fact that degenerative changes, through their early onset, tend to mask the picture of a post-inflammatory degenerative condition into a primary degenerative one, should not in any way obscure our observations, which tell clearly of the true aetiological basis.

The third point in the present discussion is the comparison between the clinical condition known as degenerative pannus and the pterygium. Pannus degenerativus is a pathological condition that affects blind, shrunken globes following diseases as cyclitis, glaucoma or detachment. Clinically it starts with a dullness and unevenness of the corneal surface, with formation of vesicles, which on bursting intermittently give rise to considerable irritation. Histologically the changes arise in the substantia propria, new formed connective tissue forms which breaks through Bowman's membrane and is subsequently vascularised from the limbus. The vascularised new formed connective tissue is seen lying upon Bowman's membrane and under a thickened and degenerated epithelium. As the connective tissue under the epithelium contracts, the vessels tend to be obliterated. Subsequent changes include amyloid and hyaline degeneration and the conversion of the entire tissue into a homogeneous mass. This condition of pannus degenerativus, whether it is degenerative in nature, or whether, as I believe, it is due to the irritation of circulating toxins affecting the endothelium of the cornea, bears in its pathological picture a resemblance to that of pterygium. In both there is the same infiltration of the superficial elements

followed by new fibrous tissue deposition. But while in pannus degenerativus, the pathological changes that occur in the cornea invite a limbic vascularisation, in the case of pterygium, a whole fold of the conjunctiva is invited to encroach. I consider this resemblance in the pathological picture and variance in the resultant sign a proof of my opinion regarding how the pterygium is formed. A pterygium does not occur if the cornea alone is affected, whatever the amount of fibrous tissue deposited, as the pannus degenerativus proves. It does not also occur if the conjunctiva alone is affected, as is seen in cases of chronic irritative exposure conjunctivitis in which the inflammation is restricted to the conjunctiva. It is only when the conjunctiva and cornea are simultaneously affected, with the deposition of new formed subepithelial fibrous tissue bands in both, that through the contraction of this fibrous tissue, a pterygium gets formed.

The aetiology

Pterygium in my opinion is an irritative disease. The causes of the irritation are many and various, and it is not my intention here to discuss them all. I will discuss just two points that I could investigate. The first is the influence of the locality on the rate of incidence. The second is the relation between the incidence of pterygium and the patency of the lacrymal passages.

As regards the first question, I would like here to mention that the present investigation is the outcome of a 6 years' stay as the only ophthalmic surgeon in a district in Upper Egypt full of cases of pterygia, called Akhmim district. This district is a narrow strip of land, not more than 15 miles wide in its widest part, and about 40 miles long, lying between the Nile river on its western side, and the Haridi hills on its north, east and southern sides. Its population is about 120,000 and it contains 28 villages scattered here and there, some near the Nile bank and others more close to the hills. The average number of new patients seen in the only ophthalmic hospital present was about 12,000 per year, most of which were cases of conjunctival affections. Among these, pterygium was practically a daily finding. And, generally speaking, more cases of pterygia came from the villages that were near the hills (about 75 per cent.) than those nearer to the Nile (about 25 per cent.). The greatest percentage was from two villages in particular. These are the village called Issawyia and the one called Eastern Sawamaa. The Issawyia village is near the hills and about 30 per cent. of its population work as stone cutters in the nearby stone mines, the Issawyia stone being notorious all over Upper Egypt. This might

explain the cause of the increase of pterygium in it. The second village is an ordinary village, near the hills, with most of its population working as ordinary farmers. But it is unique in that separating it from the hills and to its northern side is a strip of sandy desert the superficial stratum of which is composed of a layer of fine sandy dust, which our northern wind carries to the village every now and then. And though there are other villages built actually on the slope of the hills, yet it was those two villages in particular that were studded with cases of pterygia. As far as the first village is concerned, the cause of the high rate of incidence of pterygium cases is obvious, for it is well known that pterygium is prevalent among stone cutters. While in the second village, I think the cause of the increase of pterygium cases in it is due to its position and the quality of the sandy dust that is blown towards it. Sandy dust is more coarse than ordinary dust and thus is more irritant, but it is not so coarse as not to be blown by winds of ordinary velocity. And just to prove the influence of the locality in this particular case, I will mention an interesting case that I observed eight years ago and am still following. It is the case of a lawyer from Sawamaa, who was practising in Akhmim (which is the principal town of the district). He came to me eight years ago to "try to do something for the reddish blush that he has got in the inner part of the white of his eyes." He is well built with smooth lids and emmetropic refraction. The only thing he had got was a reddish, slightly raised area extending nearly from the caruncle to the limbus in both eyes with radially disposed engorged blood vessels. It began so insidiously that he did not notice it, but it is progressing steadily though slowly. Six months later, the inflammation and redness began to attack the limbus and a very early pterygium was starting. Then he was appointed to a Governmental post in Cairo and left the Akhmim district altogether, returning only in the annual leaves. All the time no treatment of any value was given to him. After one year of his living in Cairo, I saw him and strangely enough, his progressive early pterygium could not be seen any more. The inflammation disappeared spontaneously by the simple change of the locality of habitation. And now all signs of his previous chronic irritative conjunctivitis have disappeared leaving only a comparatively thin strip of conjunctiva in the inner part of the palpebral fissure with hardly any vascularisation. This case is very convincing from many points of view, the most important of which is the marked influence of the locality of habitation on the incidence of pterygium.

The second point I have tried to investigate is the relation between the patency of the lacrymal passages and the incidence of pterygium. Pterygium is an irritative condition that affects

the inner part of the bulbar conjunctiva more than it affects the outer part owing, most probably, to the normal flow of tears from out inwards carrying with them any dust particles or fine foreign bodies and accumulating them there and thus exciting the inflammatory process. So it would be interesting to note the relation of the percentage of lacrymal patency in cases of pterygium and otherwise. I examined 100 cases of pterygia, in different stages of development, as regards the patency of the lacrymal passages, with a control of another 100 cases, with no pterygia, taken haphazard from the out-patients. No convincing result was obtained as the percentage of non-patency was practically the same in the two groups of patients, amounting to about 14 per cent. in the former group and to 12 per cent. in the latter. So the patency of the lacrymal passages seems to bear no relation to the aetiological factors of the pterygium.

Treatment

Many operations have been devised for the treatment of pterygia, most of which are not soundly based. The operation in vogue in Egypt for the treatment of pterygium is the McReynolds' tucking operation, though in recurrent cases, other procedures are used such as diathermy coagulation of the blood vessels, transplantation, mucous grafting or total excision. The McReynolds' tucking operation is the only procedure worth discussion. The principle of the operation is to tuck the head of the pterygium, after disentangling it from the cornea, under the conjunctiva so that if the pterygium wants to "grow," it will grow and extend harmlessly. After practising this operation, even with Dr. Bakly's modification, in the treatment of my cases for a long time, I noticed that I got more than 30 per cent. recurrences. The operation is an easy and straightforward one and can be mastered even by beginners, so the high recurrence rate, which is to be considered as evidence of failure, cannot be due to a faulty technique. Many of my colleagues also reported a similar percentage of failures and some of them reported a recurrence rate as high as 50 per cent., while others reported cases that were operated upon three times and recurred a fourth time. In fact, in practically every case of progressive active pterygium, after you tuck it, a few months later you find it still well tucked down, but a new pterygium starting to form in the original site. The operation is only successful in atrophic pterygia in which the inflammation has completely subsided. Otherwise it is of no practical value, as it is only a symptomatic treatment and rarely, if ever, does a symptomatic treatment prove to be a true cure. And as a symptomatic treatment it is even of no value, because if it is only successful in atrophic cases, as in reality it is, in which the inflammation has completely subsided, a tucking in such cases is not needed and a simple excision of the head

would be as satisfactory and less mutilating. So from every point of view, the tucking operation is of no use or is not needed.

The treatment that I have been adopting in the last six or seven years, which many of my colleagues in Egypt have adopted, has fortunately given me most satisfactory results. It is based upon the assumption that the pterygium is the symptom of an underlying, more or less self-limiting, kerato-conjunctivitis, and I have tried to imitate and enhance Nature's technique in this self-limiting process. This line of treatment has been practised on more than 600 cases and until now with complete success, a fact which proves beyond doubt the soundness of its basis. According to the assumption that the condition, basically, is a kerato-conjunctivitis, the cases may be divided into two groups: (1) Atrophic cases in which the inflammatory process has subsided completely and regression with degeneration and atrophy has taken place; (2) progressive cases in which the inflammation is still active.

For the atrophic cases, I either leave them alone, if they are very small, or operate at once. While for the progressive cases, I treat them first for about 10 to 15 days, depending upon the severity of the case, with zinc sulphate drops half per cent., 3 to 4 times daily and yellow-precipitate ointment 1 per cent. twice daily. If there is any discharge, 10 per cent. argyrol drops are given. No painting of the lids with silver nitrate is used as this causes irritation, a thing that we are trying to prevent. Generally the cases subside a good deal with this treatment, so that in most cases it need not be applied for more than 4 to 5 days. After this the patient should be operated upon.

The operation

Cocaine anaesthesia with 1 per cent. solution is used as instillation, every 2 minutes, 5 to 6 drops being sufficient. The eye is washed with a bland antiseptic solution (sublimate 1 in 7,000), and the speculum inserted. The neck of the pterygium, which is the part over the limbus, is caught with fixation forceps, and the head of the pterygium well shaved from its corneal attachment. This disentangling of the head is best done with a sharp scalpel or an old Graefe knife. This way of disentangling the head is from every point of view far better than the way in which the head is disentangled by the sawing movement of a strabismus hook passed under the neck and driven towards the centre of the cornea. After shaving the head well from the cornea, taking care not to leave adherent areas near the limbus at the upper or lower borders, the head is held with fixation forceps and the pterygium well undermined up to the caruncle with fine strabismus scissors. After undermining the whole pterygium release it and note, with the eye directed forwards, if there is any part of it redundant and lying

over the cornea. In most cases, after freeing the head from the corneal attachment and undermining the conjunctiva to the caruncle, the fold of conjunctiva that formed the pterygium will return to its place, no upper or lower borders will be seen any more and no redundancy is noticed. Yet in some long standing cases, a small bit of the head is found to be still redundant, and this part is to be excised with the scissors so that, with the gaze directed forwards, the edge of the pterygium just abuts against the limbus. Then the pterygium is held with fixation forceps, and the fold of undermined conjunctiva raised away from the sclera and its under-surface cauterised with carbolic acid. The cauterising is done with a wooden toothpick which has been dipped in the carbolic. Only the under-surface of the conjunctiva is cauterised, care being taken not to cauterise the surface of the sclera. This finishes the operation. No stitches are needed, because there is nothing to be stitched. Before bandaging the eye operated upon, a bit of yellow-precipitate ointment 1 per cent. is put in the lower cul-de-sac. The patient is to be dressed daily for 4 or 5 days with zinc sulphate drops half per cent. and yellow precipitate ointment 1 per cent. After that the bandage is discarded, and for another 10 to 20 days, the zinc sulphate drops and the yellow precipitate ointment are to be continued.

The operation is very simple, though its simplicity cannot be a drawback. Its first step is to cut every connection between the fold of the conjunctiva that we call the pterygium and the cornea. This is accomplished by the close shaving of the head, and thus getting all the fibrous tissue elements on the under-surface of the head. Through this step, and the second step in which we undermine the whole area of the pterygium up to the caruncle, we ensure that all the fibrous tissue elements, which in my opinion are the cause of the conjunctival encroachment over the cornea, are sticking to the under surface of the disentangled and raised fold of conjunctiva. The third and most important step is the cauterisation of this connective tissue found now on the under-surface of the conjunctival fold. The cauterisation has a three-fold aim. It hastens the process of healing, and it hastens the complete shrinkage of the fibrous tissue bands, and through this hastening of the shrinkage, it constricts the blood vessels, cutting to a certain extent the blood supply, and thus imitating Nature's self-limiting process. For I believe that the pterygium is a self-limiting pathological condition through the diminution of the blood supply that occurs as a result of the final shrinkage and contraction of the submucous connective tissue bands and fibres. This is the aim of the cautery. And as is obvious, it is not applied so that the conjunctiva sticks to the sclera. In fact I try to obviate this as far as possible by carefully cauterising only the under-surface of the

conjunctiva, by removing any excess of carbolic acid on the wooden applicator and by carefully swabbing any excess after cauterising. I do not as a routine cauterise the bare area of the cornea, as I found that cauterising it does not affect the end result, and cases that were non-cauterised were as successful as cauterised cases. Still cauterisation of the corneal area does not cause any harm and may be done. Immediately after the cautery, the conjunctiva shrinks a bit and a reactive hyperaemia follows. All this disappears in a few days. The zinc drops are mild astringent drops, while the yellow precipitate ointment is a mild irritant whose property of helping the body in getting rid of replacement fibrous tissue is known, and I have found the combination of these two drugs with the operative treatment effective adjuvants in the treatment of the pterygium.

From the cosmetic point of view, the result is excellent and after a few weeks, and even before that, you can hardly see any trace of the operation. From the surgical point of view, this treatment, as proved by the successful results, is based on a perfectly sound basis. Further, I would like to mention that in the last six or seven years, about 600 cases were treated in this way, most of which were periodically followed and observed, and up till now I have not had a single recurrence.

Sufficient time has now elapsed in which to test the efficacy of this operative procedure, so that I now have every confidence in offering it to the medical profession.

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ANNOTATION

Sir Isaac Newton and colour vision

The Tercentenary celebrations of the birth of Sir Isaac Newton should not be allowed to pass without an expression of the indebtedness which all students of colour vision owe to the man whom Prof. Andrade regards as the greatest scientist who has ever lived.

Not content with discovering the prismatic dispersion of light he propounded the laws of the mixture of pure colour stimuli. Of these by far the most important theoretically and practically is the fact that any colour can be matched by a suitable mixture of three selected radiations. This is the fundamental fact, and no theory of colour vision can be comprehensive which does not take it fully into

account. It is upon it that Thomas Young founded the Trichromatic Theory, which was accepted and elaborated—perhaps over-elaborated—by Helmholtz. To it we owe the three "sensation" curves (better termed distribution co-efficient curves), first calculated and graphed by Clerk-Maxwell, and subsequently re-estimated by more accurate methods by König, Abney, Wright, and others.

In the earlier researches "there were a number of obscure features and imagined limitations that required clarification. There was, for example, confusion between the specification of a colour in terms of the three fundamental physiological responses of the Young-Helmholtz theory and its measurement in terms of a mixture of three physically defined radiations; the possible arithmetical manipulations of the data were not appreciated, in particular the freedom with which values recorded in terms of one set of radiations could be transformed to a different set, the consequent liberty to choose reference stimuli for a colour specification different from the radiations used experimentally in colour matching and so on. Two papers by Ives provided the first detailed solution of colour mixture problems on the trichromatic system, followed by two papers by Guild, who reduced the problems of colour mixture to two dimensions by separating the amount of light from its quality, and applied the ordinary rules of plane geometry to their solution."

The above quotation is from W. D. Wright's "The Measurement of Colour,"* which, after giving the most lucid theoretical and mathematical exposition of the subject, deals exhaustively with the methods and applications of colorimetry.

Ophthalmologists are more concerned with physiological and pathological aspects of colour vision, but it may be safely said that no one is fully competent to attack these until he has grasped the facts of colour mixture. These are facts, and the trichromatic theory is based upon them; but the trichromatic theory by no means explains *all* the facts. Many of the difficulties are removed by a knowledge of the peculiarities of the receptive apparatus—the rods and cones, adaptation, induction, electrical responses, and so on. None the less we owe an enormous debt to the physicists and their illustrious protagonist, Newton.

ABSTRACTS

MISCELLANEOUS

(1) **Lancaster, W. B. (Boston).—What is orthoptics?** *Jl. Amer. Med. Assoc.*, February 16, 1946.

(1) This admirable exposition of orthoptics and of orthoptic treatment deserves study by all those who deal with defective

*The Measurement of Colour. By W. D. Wright, A.R.C.S., D.Sc. Adam Hilger Ltd., 96 St. Pancras Way, Camden Rd., London, N.W.1. Price 30 shillings net. 1944.

habits of seeing, defects of binocular vision and defects of ocular motility. The article has been adopted by the American Council on Physical Medicine and has been prepared with the co-operation of numerous consultants on optical devices.

A. F. MACCALLAN.

(2) **Memorial Ophthalmic Laboratory, Egypt. Report for the years 1939-1944.** Schindler's Press, Cairo. 1945. Price, 25 piastres.

(2) This is the final report of **R. P. Wilson** who has relinquished the post of Director of the Ophthalmic Laboratory after eighteen years of service. During this time important researches on the aetiology of trachoma and of the various forms of bacterial conjunctivitis which afflict Egypt have been published in the previous thirteen Reports.

The Report contains papers by Wilson, the late J. O. W. Bland, pathologist of the Laboratory, and others. Those which have not yet been published will be abstracted in due course.

A. F. MACCALLAN.

BOOK NOTICES

La Sensation—Guide de Vie. By HENRI PIERON, Professor of Physiology of the Senses at the Collège de France. Paris: L'Avenir de la Science. Gallimard. Price, 320 francs. 1945.

During the past few years considerable advance has been made in our knowledge of the physiology of the senses. The war has contributed to these investigations, especially with regard to sight and hearing. It is difficult to keep *au fait* with these researches, which have been published in widely scattered physical, physiological, neurological and psychological journals. In this book Professor Piéron has provided a thorough and critical survey of the whole domain. He has specialized in the subject and has himself added much to our knowledge, especially with regard to the time relations of sensory responses.

The book is divided into four parts. The first deals with the stimulus—its fundamental regulative function; evolutionary differentiation and specificity; classification of sensations and general characteristics (intensity, extensity, and time relations). In the second part the mechanisms of excitation are considered—mechanical (tactile, vibratory, auditory, proprioceptive), thermal, luminous, chemical (undifferentiated, olfactory, gustatory). The third part deals with qualitative appreciations—chromatic, auditory, olfactory, gustatory. In the fourth part quantitative appreciations are discussed: in it the difficult problem of the idea of quantity in relation to sensations—as opposed to stimuli—is stated, and

Fechner's law is critically examined. Chapters are devoted to the spatial and temporal aspects of vision, touch, and hearing, and to discriminations of intensity.

Ophthalmologists are recommended to read the book. It will give them a broader view of the functions of the senses; and will further reveal to them not only the extreme complexity of the sensory problems themselves, but also of their neurological and psychological integrations into perceptions, which are truly regarded as guides to life. If for no other reason, they should read it in order to learn about the more recent advances in the physiology of vision. The work of Hecht and Wald on photoreception is described, but we miss any reference to the outstanding work of Lythgoe. Adrian and Granit's epochmaking researches on optic nerve and retinal electrical responses are also described. The importance of Granit's discovery of dominators and modulators for colour vision and its relation to the trichromatic theory are discussed, and are held to confirm Piéron's own modification of that theory.

Piéron's philosophical attitude may be expressed in a paraphrase of his own statements. Sensory stimuli originate organic reactions which elaborate sensory messages. It is through the qualitative and quantitative characteristics of these messages that we are able to adapt ourselves to the environment, develop our cognition, and build up a utilitarian cosmology. Popular realism, in its naivety, envisages the sensations as furnishing a fairly true image of the outer world. The more, however, that we study the matter the more we are forced to conclude that our sensations are but biological symbols of the outer forces acting upon the organism, which can have no more resemblance to these forces than there is between the sensations themselves and the words which signify them in the symbolic system of the language serving for social, interhuman relations.

It cannot be said that the book is easy reading; and some of the paragraphs lack that clarity of expression which is so characteristic of most French scientific literature. It is much to be hoped that it will be translated into English, for it is a masterly exposition of its subject in all its aspects.

Les aspects pathologiques du fond de l'oeil dans les affections de la rétine. By G. RENARD, Paris. Masson et Cie., 120, Boulevard Saint-Germain, Paris, VI.

This fine volume is an atlas containing 32 coloured drawings of various pathological conditions of the fundus oculi with observations and commentaries by the author, Gabriel Renard, who is associate professor of ophthalmology in Paris. The artist who made the drawings, the firm which made the blocks and the publishers are to be congratulated on the success of their efforts. The volume was presented at the recent congress of La Société Française d'Ophtalmologie in May, 1946.

Ocular Prosthesis. By J. H. PRINCE, F.B.O.A., F.S.M.C., F.I.O. Late Regional Association Lecturer in "Comparative Ocular Anatomy" and "Ocular Evolution." Pp. 128, 76 Illustrations. Published by E. and S. Livingstone Ltd., 16 and 17, Teviot Place, Edinburgh. 1946. Price 17/6.

A book on ocular prosthesis is needed at a time such as the present when considerable technical improvements have been effected in the making of prostheses in acrylic plastic. In chapter VIII the author gives an interesting account of the technique of casting the prosthesis from moulds and the artistic work in making the iris. Some of the devices are his own design.

He reviews the history of ocular prostheses from the days of Ancient Egypt to Ambroise Paré's efforts in the 16th century and on to-date.

It is quite proper that in such a book a description of anatomical and pathological facts relevant to the socket should be included but the author has given more than is necessary to his subject and some of his statements are inaccurate and would mislead readers who have not had a medical training. Papillitis is given as an indication for excision of the eye and it is stated that an infected socket may lead to the loss of the remaining sound eye. On p. 44, the author comments that enucleation as described by Richard Rowley in 1743 "differs only in detail from present day methods", he goes on to describe the separation of the conjunctiva from the globe at the fornices, the passage of a thread through the eye and the severance of muscles, fat and optic nerve with scissors.

The treatment recommended for conjunctivitis is quite out of date and the use of a silver nitrate pencil on conjunctival scars is improper. A statement that 'cretinism is perhaps a tendency to return to a more primitive mental and physical state' is irrelevant.

The illustrations of the apparatus used in making prostheses are good. Fig. 9 showing a section of the upper lid is poor, Fig. 14 of the lacrimal apparatus is inaccurate and Fig. 16 is artistically fanciful rather than anatomically true. A number of proof corrections are necessary.

Ophthalmic Optics as a Career. By F. R. CORNWELL. Vawser & Wiles Ltd., London. 5/- net.

This little book describes concisely the history of ophthalmic optics, its principles and its practical application in the treatment of patients suffering from refractive errors. Its purpose is to show those who intend to become opticians the scope of this career and its prospects.

A chapter is devoted to the optician in industry and his work as adviser on lighting and ocular defects in employees. Advice is given about practice and the appendix contains lists of examining bodies, optical journals, text-books, technical libraries teaching institutions and refraction hospitals; notes about scholarships and a code of ethics are also included.

"Squint and Convergence." By N. A. STUTTERHEIM. H. K. Lewis & Co., Ltd. 1946.

In his interesting monograph Mr. N. A. Stutterheim has set out to show that the Kinetic treatment developed by him in connection with eyestrain* can readily be adapted to the cure of squints. He does not, however, confine himself merely to a description of this new development but examines in detail the possible origin of squints and makes suggestions for a State scheme to provide for the mass treatment of squints as part of the normal primary school curriculum.

Mr. Stutterheim attributes the main cause of squint to what he calls "the abeyance" of convergence and he illustrates his argument with the example of the infant child. A normal infant begins to converge when he is about 5 months old; if, however, the power of convergence is in abeyance, he will see two images and as he learns to use his hands he will rapidly fasten on to one image and suppress the other. Treatment to overcome this suppression cannot, however, begin until the child is old enough to co-operate intelligently, by which time further complications such as deviation, neutralisation, pseudofovea and amblyopia have set in. The basic cure therefore lies in the removal of the cause of the squint "by connecting up kinetically the power of convergence with the bi-foveal vision" (p.22).

The equipment used by Mr. Stutterheim is identical with that which he employs for the treatment of convergence deficiency; namely a battery of prisms placed base out in front of the patient who sits 18 feet away from a Bjerrum screen on which a coloured cardboard strip is fixed; by gradually increasing the power of the prisms the patient can be made to develop his range of convergence. The examples given by Mr. Stutterheim show that he regards a range of from minus 8° to plus 84° achieved and maintained as a cure; but he makes it clear (p. 24) that amblyopia may persist in a lessening degree "for some considerable time after the cure of the squint" and he stresses that "for weeks and months and even for years sometimes, education is still required to accustom the ex-squinter to forego uni-ocular neutralisation in all instances of impending diplopia, and to cultivate diplopophobia instead" (p. 23).

Mr. Stutterheim states that the average treatment requires "30 to 60 hours of physiological ophthalmic expert work" and in his proposals for the inclusion of this treatment in the educational curriculum he refers to "a year's daily treatment" with 10-20 minutes spent with the physiologist on the battery of prisms and a further 40 minutes spent in relaxation on synoptoscopes, diploscopes and similar instruments. Occlusion is necessary throughout the whole of the year's treatment in order to stimulate the visual acuity of the amblyopic eye and to counteract "the pseudofoveal inclinations of the retina," *i.e.*, abnormal correspondence. Stereoscopic vision will be developed during treatment.

* See "Eyestrain and Convergence," 1937, by the same author.

The author includes 26 graphs taken from the 97 cases on which his monograph is based to show the progress of the treatment; in 21 of these 26 cases, surgical adjustments were necessary to shorten or lengthen the capsule of Tenon, but Mr. Stutterheim is generally opposed to any other form of operation. It is interesting to note that among the cases illustrated are three with paralysed muscles and ten with alternating squints.

The author outlines a plan, primarily for South Africa but capable, no doubt, of being adapted to the requirements of other countries, which is designed to ensure that no child leaves his primary school with a squint. The plan is based on the establishment of special well-equipped clinics each run by a physiologist and two capable nurses who would be able to cure 40 squinters a year; these clinics would form an integral part of the educational scheme and in this connection the author stresses the importance of removing squinting children from their home surroundings during treatment.

Mr. Stutterheim claims that the treatment of squints should be placed in the hands of medically qualified physiologists: in making this claim, he says (p. 30) "it should certainly in no wise be left in the hands of surgeons and optometrists. And it would be ***most disastrous*** if it were left to amateur or techically trained lay people, "orthoptic[3]" or otherwise". It is unfortunate that in his enthusiasm the author allows himself more than once to make sweeping comments of this type without justification. From the orthoptic point of view, he appears to ignore entirely the important and substantial progress of recent years and it would require more space than is available in a brief review to give a full critical assessment of his treatment.

Nevertheless Mr. Stutterheim's monograph opens a new line of thought which deserves serious consideration and it would be a pity if his intolerance of other methods were allowed to detract from the value of the research which he has carried out.

CORRESPONDENCE

LOCALISATION OF INTRA-OCULAR FOREIGN BODIES

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—With reference to the recent letter of Mr. Bernard Gluck on the localisation of intra-ocular foreign bodies I enclose a photograph of two instruments which I have found of considerable practical use.

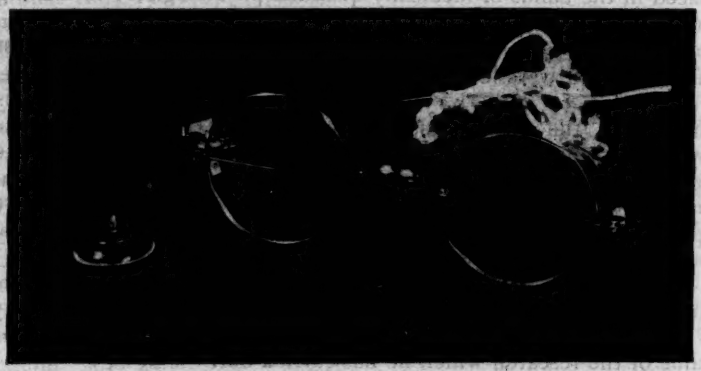
The spectacle frame, with cross wires, movable cursor and synthetic non-opaque arms (Love's method of localisation) was discarded as soon as I learnt of the limbal ring method in the first of Mr. H. B. Stallard's papers on this subject. I found Love's method useful, however, in gauging the site of extra-ocular foreign bodies in the region of the eye. The spectacle frame was held firmly on the face by elastic attached to the arms.

Fl. Lt. C. M. Brown of the Royal Air Force Dental Service, very kindly made for me contact glasses of portex in which the opaque limbal ring was embedded as near the inner surface as possible. These were used in the same way as stitched-on rings.

Two practical points arose in using contact glass localisers of this type.

(1) An embedded opaque *ring* appeared to be the best form for measuring off the situation of the eye on the X-Ray film.

(2) It was a great advantage to have a small square projection on the middle of the anterior surface of the contact glass in order



that the ring could be pushed into exact position on the limbus *immediately* before each X-Ray was taken. The slight increase of shadow in the A.P. picture at the site of the projection was not found to be a disadvantage in practice.

I am indebted to Fl. Lt. B. C. Elliott for the photograph and to Air Commodore P. C. Livingston, C.B.E. for permission to describe these instruments.

Yours faithfully,

F. W. G. SMITH.

CAMPDEN LODGE,
WESTGATE-ON-SEA.

July 12, 1946.

DISABILITY CONSEQUENT ON BLOCKAGE OF A BRANCH OF THE CENTRAL RETINAL ARTERY

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

DEAR SIRS,—A recent experience in County Court on a compensation case in which a blockage of the superior branch of the R. retinal artery was allowed as accidental in a man aged 37 years prompts me to ask if any one can give experience of working disability, discomfort or confusion persisting in such cases. The R. lower field was abolished and the macular area perhaps partly involved. It was only on slightly flexing the head that 6/6 (6/5 part) was secured. On throwing the head back to the slightest degree the central spot on the screen was lost. This is three years after the lesion. I saw him the day after the lesion, which came on immediately after lifting a heavy weight. I argued that the frequent and sudden changes from binocular to monocular vision would be more disconcerting than a constant black out such as one gets in total loss of one eye or in a lateral hemianopia. The man's story of great discomfort in carrying heavy weights on his shoulder or engaging in work that made it necessary to look upwards bore this out. A personal experience of a close observer in such a lesion would be invaluable if such could be got.

I am, yours truly,

A. CHRISTIE REID.

NOTTINGHAM.
July 19, 1946.

NOTES

Appointments

MR. D. D. STENHOUSE STEWART has been appointed Ophthalmic Surgeon to the Hull Royal Infirmary, and Mr. S. J. H. Miller, Assistant Ophthalmic Surgeon to the same.

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University of Glasgow Department of Ophthalmology Autumn Term, 1946

DURING September and October a series of meetings will be held in the Department on Wednesdays at 8 p.m. The general arrangements will be similar to the series held last year. Tea will be served after the paper and a discussion will follow. The meetings will be open to all medical practitioners and senior students interested in Ophthalmology.

September 11, Prof. W. J. B. Riddell—"Irregular Dominance in Hereditary Nystagmus"; September 18, Dr. W. O. G. Taylor—"Etiology and Treatment of Paralytic Squint"; September 25, Dr. J. B. Gaylor—"Electroencephalography in Retinal Disease";

October 2, Mr. John Foster—"An Ophthalmic Tour of Switzerland"; October 9, Dr. Michaelson—"Proptosis and Exophthalmos"; October 16, Prof. Loewenstein—"Phakomatoses."

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University of Glasgow Post-graduate Committee

AN intensive course in Ophthalmology by teachers to the University of Glasgow has been arranged for the week between September 23 and 28, 1946, the meetings to be held in the Tennent Institute—two lectures each morning, and three in the evening, 13 lectures in all, with clinical meetings to be held in one or other of the Clinics in the afternoon.

SUBJECTS OF THE LECTURES. 10 a.m. daily, *Cornea*, five 1-hour lectures/demonstrations:—Dr. P. M. Wood, Anatomy; Dr. W. O. G. Taylor, Physiology; Dr. James Hill, Pathology and characteristic reactions of the Cornea; Dr. S. S. Meighan, Rosacea Keratitis; Dr. I. C. Michaelson, Epidemic Kerato-Conjunctivitis. 11.30 a.m. daily, *Squint*, five 1-hour lectures/demonstrations:—Dr. A. Mellick, Anatomy and Physiology; Dr. J. A. Conway, Investigation of Squint, and the different types; Miss Feather, Orthoptics; Dr. John Marshall, Operations; Dr. John Marshall, Assessment of results. 2-4 p.m. daily, *Clinical Demonstrations*. 8 p.m. daily, *Simple Detachment of the Retina*, three 1-hour lectures/demonstrations:—Dr. Dan Turner, Etiology and types; Dr. A. M. Wright Thomson, Investigation and diagnosis; Dr. J. N. Tennent, Operative treatment. Fee, £4 4s. 0d.

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A Turkish Medical Journal

THE second fasciculus of Vol. I of *Oto-Noro Oftalmologi* has just reached us. It is well printed on good paper with excellent illustrations. The original papers are two in number: (*a*) Craniopharyngiomata of the hypophosis by Dr. I. S. Aksel and Dr. Kemal Akgüden; and (*b*) two cases of Marcus Gunn's phenomena, by Dr. Zeki Ural, the latter with a very good illustrative photograph. The remainder of the number contains abstracts of a paper on heparin in thrombosis of the central retinal vein, a report of a paper read at the American Academy of Ophthalmology and Oto-Laryngology, and an abstract of a paper in our columns in 1941 by Tooke and Nicholls. Lest any reader of the above should credit us with ability to read Turkish it may be as well to state that English abstracts of the original papers are furnished at the end of the part. We extend a hearty welcome to this new publication.

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Corrigendum

IN the paper on diagnostic and clinical value of some forms of retinal angiospasm by N. Pines, p. 475, ten lines from bottom of page, "two possible causes" should read "two possible courses."